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Strategic Anticipation and the Hierarchy of Justice in U.S. District Courts

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Does the hierarchical relationship between the district courts and the courts of appeals influence decision making at the trial level? Do these judges anticipate responses by appellate panels and condition their decisions based on these expectations? Using a sample of district court cases from 1925 to 1996 that were subsequently reviewed by the courts of appeals, and incorporating a strategic choice statistical framework, I discover that the district courts are constrained by the anticipated responses of the appeals courts. However, this conclusion is not apparent if one analyzes the data using traditional maximum likelihood methods. Only when empirical analyses specifically model underlying strategic relationships does one discover this constraint. If the federal trial judges anticipate a negative response on appeal, then they curtail their ideological influences (the magnitude of influence decreases by approximately one-half). This pattern remains consistent when one examines civil liberties and economic cases, but not for criminal cases. Thus, the hierarchical structure of the federal judiciary appears to exert a significant constraint on the district courts.

Keywords: U.S. district courts; U.S. courts of appeals; federal judiciary; trial courts; judicial decision making; precedent; strategic anticipation

The people of this district either get justice here with me or they don't get it at all. I've had a number of cases appealed over the years, but I've never been overruled. And I've never had a case go to the Supreme Court.

Judge Henry Norman Graven[1]

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The above quote from Judge Graven highlights an important but often neglected aspect of judicial behavior: to what extent are lower court judges constrained by decisions from higher courts? Beginning with the article by Songer, Segal, and Cameron (1994), a debate has emerged among scholars of the judiciary about whether the structure of the federal hierarchy imposes constraints on judicial behavior. Yet, this debate has focused almost exclusively on influences between the Supreme Court and various inferior courts. Scant attention has been devoted to whether the judicial hierarchy impacts the decision calculus of trial court judges.

If Judge Graven's statement provides any insight, it would appear as though district court judges render decisions in a hierarchical vacuum—without concerns or considerations about potential negative consequences on appeal. Yet, scholars observe numerous trial court decisions that are overturned on appeal. Consequently, this raises the question of whether the number of reversals on appeal serves as a potential constraining influence on district court judges. If the answer is no, as Judge Graven's statement indicates, then the accountability of federal trial courts is potentially at risk, with judges rendering decisions without concern for future ramifications. However, if the answer is yes, then the hierarchical structure of the federal judiciary ensures that individual judges do not "run amok" at the trial level. Consequently, it behooves scholars of the judiciary to determine how its institutional structure affects individual behavior.

In this article I examine the question of whether the relationship between the district courts and the U.S. courts of appeals affects decision making at the trial level. Stated another way, are district court judges constrained by the appeals courts? Do these judges anticipate responses by appellate panels and condition their decisions based on these expectations? To address these questions, I initially develop a theoretical model of decision making within a judicial hierarchy. I then develop a statistical model using a new empirical analysis based on a strategic choice framework. The empirical results indicate that district courts anticipate how their decisions will be treated by the courts of appeals and curtail the influence of ideological preferences when a reversal is expected.

A Theory of Decision Making in Judicial Hierarchies

The institutional structure of the federal judiciary facilitates an application of the legal concept of *stare decisis*. Under this principle, courts located in the lower echelons of the hierarchy apply binding precedents—handed

down by higher tribunals—to resolve current disputes. As Canon and Johnson (1999, p. 30) state, "all courts lower in the hierarchy must attempt to apply the policy to relevant cases, interpreting the policy as necessary to fit the circumstances at hand." Several scholars examined lower court treatment of legal precedents and concluded that inferior judges generally adhere to Supreme Court pronouncements of law (Benesh & Reddick, 2002; Gruhl, 1980; Johnson, 1987; Songer & Sheehan, 1990), and lower court judges tend to follow ideological trends from these higher tribunals (Baum, 1980; Songer, 1987). According to Baum (1997), the reason for compliance by lower court judges is that while those judges seek to set doctrine near their personal ideal points, they realize that doing so may increase the chance of being reversed by a higher court. The potential for reversal, therefore, acts as a significant constraint on the ability of lower court judges to rule ideologically. This conclusion implies a strategic relationship between the lower court and the appellate court, with the former anticipating the behavior of the latter and potentially altering its behavior based on this calculation. Yet, a direct test of strategic anticipation by the lower court has not been developed. This article seeks to provide such a test by empirically modeling the strategic relationship between the district courts and the courts of appeals.

To understand the influence of this hierarchical relationship, scholars have turned to principal–agent theory. The fundamental premise behind this theoretical construct is that the principal seeks to produce results according to his or her personal preferences but, because of a lack of resources, the principal cannot review every aspect of a particular policy arena.[2] Therefore, the principal "delegates some rights . . . to an agent who is bound by a (formal or informal) contract to represent the principal's interests" (Eggertsson, 1990, p. 40). The tension within this relationship arises because the agent also seeks to produce results according to his personal preferences, which may not be similar to those of the principal. The difficulty for the principal involves establishing substantial controls, inducements, or other enforcement mechanisms to ensure that the agent does not deviate from the principal's preferences (Shepsle & Bonchek, 1997), but because a principal cannot develop perfect enforcement mechanisms and because of information asymmetries between the principal and the agent, it is always possible for the agent to "shirk."

Empirical examinations of the principal–agent model, within the judiciary, traditionally focused on the impact of Supreme Court decisions on lower courts.[3] Songer et al. (1994) were among the first scholars to rely on this theory to examine the degree of congruence and responsiveness between

the Supreme Court and the courts of appeals. Using data on search and seizure cases, the authors demonstrate convincingly that "judges on the courts of appeals appear to be relatively faithful agents of their principal, the Supreme Court" (1994, p. 690). One of the primary components of this faithfulness involves the increased probability of losing litigants appealing a decision that deviates from the preferences of Supreme Court justices. However, they do note a substantial difference between liberal and conservative judges at the appellate court level. "These findings suggest that appeals court judges are substantially constrained by the preferences of their principal, but the complexity and tremendous variety of the fact situations presented on appeal frequently provide them with room to maneuver" (1994, pp. 692-693). Following this analysis, other scholars have used principal–agent theory to model relationships between the Supreme Court and the courts of appeals in confession cases (Benesh, 2002), between the Supreme Court and state courts of last resort in search and seizure cases (Martinek, 2000), and between the Supreme Court and state courts in confession cases (Benesh & Martinek, 2002). Thus, it is becoming apparent that principal–agent theory is a useful device for examining the impact of Supreme Court decisions on lower court behavior.

Nevertheless, because these models isolate specific areas of law (i.e., search and seizure or confession cases), they do not account for broader areas where the established legal doctrine potentially is less salient. Thus, the conclusions generated through a principal–agent framework are consistent with the possibility that lower court judges adhere to higher court precedents—thereby appearing to be responsive to the principal in the bulk of their caseloads—but ignore their superiors when deciding questions where precedent is ambiguous (Klein, 2002, p. 7). When such questions arise, how do the tenets of principal–agency theory apply? The previous empirical evaluations of the principal–agent model hint at a form of anticipatory behavior, though this is never tested directly. As Songer et al. claim, "if an appeals court anticipates that it will be sanctioned in the form of a reversal, the anticipated response will keep the court in check" (1994, p. 693). The authors do not test this claim specifically but speculate that lower court judges anticipate possible responses from their superiors; in situations where a negative response is likely, these judges strategically alter their behavior to avoid the negative outcome. Songer et al. provide indirect evidence supporting this speculation, and additional evidence provided by Benesh (2002) leads to the conclusion that appeals court judges factor potential responses by the Supreme Court into their decision calculus.[4]

Given the conclusions discovered at higher levels of the judicial hierarchy, one must question whether a similar relationship exists in the lower courts, with the courts of appeals serving as the principal and the district courts as the agents. If so, then one should expect to observe the district courts acting as faithful agents when they believe decisions are closely monitored by the courts of appeals. Yet, when district court judges believe sanctions will not come from the principal one should expect to observe shirking on the part of the agents. Because of the close relationship between the district courts and the courts of appeals (relative to these courts and the Supreme Court), there is every reason to believe that the tenets of the principal–agent theoretical framework will apply. As the appellate courts do not possess discretionary control over their dockets, they must review all cases brought before them on appeal, whereas the Supreme Court is able to selectively grant *certiorari* to a small number of cases. Therefore, the courts of appeals are better positioned to monitor the activities of the district courts. As one of the tenets of the principal–agent model indicates, compliance by the agent to the principal's wishes is directly affected by the ability of the principal to monitor the agent's actions. The Supreme Court monitors a small number of decisions, and yet is able to constrain the appeals courts. Therefore, as the appeals courts monitor a higher percentage of district court decisions it is logical to assume that a stronger constraint exists for the district courts.

Although this logical extension of principal–agency to the district courts seems relatively straightforward, there are two theoretical reasons that potentially limit its application. First, the primary motivation behind an agent's adherence to the principal—whether one examines compliance or anticipatory behavior—is the agent's desire to avoid sanction. For the judiciary, this equates to a fear of reversal.[5] Epstein et al. (1996) note that the Supreme Court is prone to reverse the decisions of lower courts when it grants *certiorari*. Though the High Court reviews few decisions, the inclination to reverse sends a signal to the appeals courts which exerts a significant constraint on their decisions. However, the appeals courts do not send a similar signal to the district courts. Instead, decisions are more likely to be affirmed; approximately 75% of appeals are affirmed by the appeals courts (Davis & Songer, 1988; Songer & Sheehan, 1992), and district court judges are aware of this tendency. If the quote by Judge Graven above exemplifies the dominant belief across the district courts, why would the judges fear reversal and subsequently feel constrained by the courts of appeals?

On the other hand, perhaps the large number of affirmances on appeal signifies that the district courts rarely rule "out of step" with the appeals courts. Consequently, this would indicate an extreme amount of deference

(perhaps caused by a fear of reversal) given to the appeals courts, in accordance with the principal–agent model. As this empirical question has not been addressed directly, it is essential to determine whether district court judges are constrained by their hierarchical relationship to the courts of appeals. If these judges consistently rule according to their ideological preferences, regardless of the potential for reversal on appeal, then one can reasonably conclude that Judge Graven's statements may reflect a general belief across the federal trial courts. However, if identifiable patterns emerge where district court judges rule against their ideological preferences, then the large affirmance rate on appeal becomes more indicative of a viable principal successfully monitoring the activities of its agents.

The second theoretical reason against application involves the ability of district court judges to estimate the preferences of the appeals courts. Discussions concerning anticipatory behavior by appellate judges depend on the assumption that these judges can discern accurately the ideological preferences of Supreme Court justices. This is a plausible assumption given the composition of the Supreme Court (i.e., all nine justices review cases and issue decisions), and it is reasonable to assume that appeals court judges may accurately determine the preferences of the High Court. However, this assumption becomes more difficult to apply to district court judges identifying the preferences of the appeals courts. Though appellate judges possess life tenure, unless a circuit meets *en banc,* not all judges will review a case and render a decision. Instead, the majority of appeals court decisions are rendered in three-judge panels. Because judges are assigned to panels through a random process, it is more difficult for district court judges to calculate which three appellate judges will review an appeal. Though they can determine the ratio of Democratic or Republican appointees in a given circuit and can calculate the probability of a partisan majority on the panel, the uncertainty involved with this process is less reliable than determining the preferences of Supreme Court justices.

For example, scholars of the appeals courts "know" that the Fourth Circuit is conservative and the Ninth Circuit liberal, and therefore, chances are that a case appealed from a district court in Virginia is likely to reach a conservative appellate panel, whereas a case from California is likely to reach a liberal panel. It is precisely because of these probabilistic calculations that district court judges must estimate who the principal is likely to be, which introduces a degree of uncertainty into the principal–agent relationship not experienced in other applications (such as the courts of appeals and the Supreme Court). Luckily, researchers can design empirical models that directly account for this level of uncertainty, allowing the equations to

incorporate a random component that measures these probabilistic calculations. This article takes that approach by designing and estimating a strategic model of district court anticipation.

In sum, although a simple logical extension of the principal–agent model to the district courts initially leads to the conclusion that these courts should engage in anticipatory behavior similar to appellate judges, additional theoretical expectations potentially limit an application of principal–agency theory to the trial level. Given these apparent contradictions, it seems prudent to empirically estimate these aspects to determine whether scholars must rethink the incentives and constraints foisted on district court judges.

To appropriately analyze the strategic interactions between district courts and the courts of appeals, our models need to account for the decision sequence and the potential constraints exerted on earlier stages by the later decisions. To assist in visualizing the decision sequence, I include a simple model represented in Figure 1 as a heuristic device. In the federal judiciary, litigation commences with a single judge[6] presiding in a district court. The trial judge can choose to render a liberal (L) or conservative (C) decision, which is then reviewed by a three-judge panel in the courts of appeals. This panel has the similar option of rendering a liberal (L) or conservative (C) decision that effectively affirms or reverses the district court.[7] As the appeals courts possess mandatory jurisdiction they must review all appeals, although in reality "about twenty percent of district court decisions are appealed in any given year" (Rowland & Carp, 1996, p. 8). Examining why certain litigants choose to appeal (or not appeal) is beyond the scope of this article, but, as every case tried in the district courts *can be appealed* and the appeals courts cannot selectively review appeals, I assume that every case tried in the district courts is reviewed on appeal. This is not an untenable assumption, as previous research examining the constraining effects of the Supreme Court demonstrates that the justices effectively keep the lower courts in check even though they review less than 1% of the cases appealed (Benesh, 2002; Benesh & Martinek, 2002; Martinek, 2000; Songer et al., 1994). Consequently, as the courts of appeals effectively monitor a substantially higher percentage of trial court cases, and as appellate panels cannot selectively refuse to review an appeal, district court judges must essentially operate under the premise that their decisions are likely to be reviewed.[8] The empirical question, therefore, is the extent to which policy-minded district court judges "must balance their preferences against the preferences of [the higher] court and sometimes take positions that diverge from their own preferences in order to avoid reversals that would move policy even further from those preferences" (Baum, 1997, p. 115). Thus, a potential tradeoff

Figure 1
Decision Sequence in the Lower Federal Courts
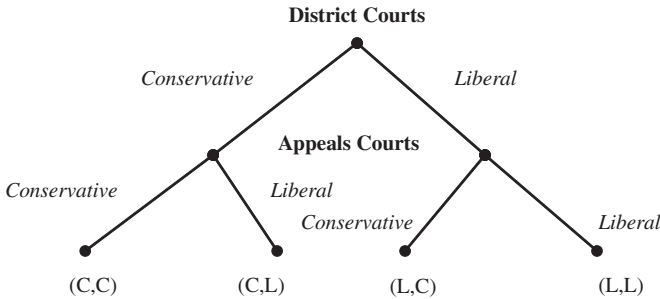
exists for the district court judge in terms of ruling ideologically and having this decision reversed on appeal. If the trial judge believes his preferences are similar to those of the appeals court, then he can rule according to those preferences without fear of reversal. Conversely, if the preferences of the district court are contrary to the appellate panel then the former may curtail his ideological proclivities to avoid a possible negative outcome after appeal.[9]

Based on the description above, there are two possible conditions under which district court judges render decisions: no strategic anticipation and strategic anticipation (i.e., fear of reversal). For district court judges who do not fear reversal (or who believe reversal is low), they receive greater utility by ruling according to their ideological preferences. Therefore, their decision calculus does not require strategically anticipating what might happen on review, because they possess a dominant strategy to rule ideologically in every instance. Consequently, one should expect liberal district court judges to consistently render liberal decisions and conservative judges to rule in a conservative manner. This leads to the initial testable hypothesis (the no strategic anticipation hypothesis):

> *No strategic anticipation hypothesis:* District court judges who do not fear reversal (or who believe the likelihood of reversal is low) will render decisions according to their ideological preferences. Consequently, as judges' ideologies become more liberal, the likelihood of rendering liberal decisions increases ceteris paribus.[10]

In contrast, district court judges who fear reversal will become increasingly constrained from ruling ideologically as they perceive the likelihood of reversal to increase. Consequently, liberal judges will become more likely to cast conservative decisions, and conservative judges will become more likely to rule in a liberal manner. This leads to the second hypothesis (the fear of reversal hypothesis):

> *Fear of reversal hypothesis:* District court judges who are motivated by a fear of reversal will be more likely to render decisions against their ideological preferences as the probability of reversal increases. Consequently, liberal judges will be more likely to rule conservatively, and conservative judges will be more likely to cast liberal decisions, as the probability of reversal increases ceteris paribus.

Research Design and Methods

Data for this analysis come from the Courts of Appeals Database, developed by Donald R. Songer.[11] Initially, I selected all appeals court cases that were originally litigated in the U.S. district courts.[12] This provided a sample of approximately 5,600 pairs of cases from 1925 to 1996. The dependent variable is the ideological directionality of the decision (coded 1 if liberal and 0 if conservative).

To directly account for strategic interactions between the district courts and the courts of appeals, I use a strategic choice probit model,[13] which examines the decisions of the initial actor (the district court judge) in relation to the anticipated responses by the latter actor (the court of appeals panel). Similar to game theoretic models that derive equilibrium behavior by working "up the game tree," the strategic choice models initially estimate the likelihood of the appeals courts rendering liberal decisions and then incorporate these predictions directly into the estimation of district court behavior.

Consequently, strategic choice models allow researchers to empirically estimate the degree of strategic interdependence encountered by multiple actors within a particular structure. As Signorino (1999, p. 279) observes, "in strategic interaction, *structure matters*. Because of this emphasis on causal explanation and strategic interaction, we would expect that the statistical methods used to analyze theories also account for the structure of the strategic interdependence." Previous empirical analyses of principal–agent models in the judiciary, however, do not account for strategic interdependence

among the actors. Instead, the authors utilize traditional maximum likelihood techniques (such as logit and probit models) to examine influences on a single actor. Relying on logit or probit models to estimate strategic models ignores two essential structural components: multiple (often sequential) decisions and multiple actors. Therefore, "logit and probit [models] induce a distributional misspecification. Even when that is negligible, the estimates of the effects of regressors—especially for the conditioning variables—are likely to be biased and inconsistent" (Signorino & Yilmaz, 2000, pp. 3-4). The consequences of this distributional misspecification are similar to omitted variable bias, which affects the estimates and leads to inaccurate conclusions (Signorino, 2000).

To address these issues methodologically, Signorino (1999, 2002) developed a set of discrete choice models that statistically incorporate the strategic interdependence experience by multiple actors. Essentially, strategic models are selection models "because the actors select themselves and others into 'subsamples' based on their choices" (Signorino, 2002, p. 3). However, whereas traditional selection models are useful at modeling sequential decisions, strategic choice models extend the analysis by also allowing for the incorporation of multiple actors within a sequential decision calculus.[14] Although the strategic choice models were developed initially to model interactions among states in international relations, scholars increasingly are incorporating their predictive power to analyze strategic relationships in American politics and other areas.[15] Consequently, these models are demonstrating their usefulness by providing scholars with additional analytic leverage to directly test potential strategic interdependence (and anticipation) among multiple actors. It is therefore apparent that these models are suitable for testing strategic behavior within the judiciary.

Properly evaluating the strategic aspects of judicial decision making also involves the inclusion of several independent variables to measure specific exogenous influences. According to advocates of the attitudinal model, judges are motivated by their individual policy preferences and vote according to these influences. Thus, the fundamental purpose of this analysis is to determine whether the hierarchical structure of the federal judiciary induces district court judges to vote against their preferences. To measure the ideological preferences of federal judges, I rely on the measure developed by Giles, Hettinger, and Peppers (2001). These scores are derived from the Poole and Rosenthal common space scores used to measure the ideological preferences of the Congress and the president; and they are modified to account for the presence of senatorial courtesy during the confirmation process. The continuous scale runs from –0.6230 (most liberal) to 0.6275

(most conservative), and the variable *District Court Ideology* incorporates these scores for district court judges. Additionally, the variable *Appeals Court Ideology* measures ideological influences at the appellate level and aggregates these scores to the court panel.[16] As I expect more liberal judges (and more liberal panels) to render liberal decisions, this variable should be negatively related to the dependent variable. If district court judges do not engage in strategic anticipation, then I expect the substantive impact of *District Court Ideology* to remain consistent regardless of the decisions from the courts of appeals. Conversely, if district court judges fear reversal then I expect the substantive impact of this variable to change considerably.[17]

In addition to the ideological variable of interest, I include two dichotomous control variables. The first measures the presence of a specific *Threshold Issue*, such as questions of standing, jurisdiction, or justiciability. Braman's (2006, p. 320) experimental analysis of decision making on threshold issues demonstrates that "attitudes systematically influenced threshold judgments in predictable ways." Using this logic, it is therefore reasonable to expect that district court judges may rely on the presence of threshold issues to avoid ruling on more controversial aspects that may draw additional scrutiny from the courts of appeals. Consequently, I include the variable *Threshold Issue* to control for these situations.[18] The second control variable measures whether judges are requested to interpret a federal statute or engage in judicial review. Several previous examinations note the importance of these particular cases to judicial decision making (see Gely & Spiller, 1990; Huber & Gordon, 2007; Randazzo, Waterman, & Fine, 2006; Silverstein, 1994). Because these cases often bring higher visibility and/or saliency to the particular case, I expect that district court judges may be more concerned with potential reversal on appeal. Consequently, I control for these effects by including the variable *Federal Statute or Constitutional Issue*.[19]

Empirical Results

The results listed in Table 1 are derived from a series of standard probit models across the entire dataset, and also various subsets. I include these results because they represent the traditional manner in which scholars examine judicial behavior. In Model 1, I list the results of a probit analysis on the entire dataset.[20] As can be seen from Table 1, the variable *District Court Ideology* is statistically significant and negative, indicating that liberal judges are more likely to render liberal decisions. Furthermore, the coefficient listing changes in predicted probability[21] reveals that as district court

judges increasingly become more conservative, they are 9.3% less likely to cast liberal votes. Yet, the variable *Appeals Court Ideology* does not exert a statistically significant effect on district court behavior. Finally, both control variables are statistically significant. The variable *Threshold Issue* is negative and reveals that district court judges are 3.3% less likely to render liberal decisions when a threshold issue is present. The variable *Federal Statute or Constitutional Issue* is significant and positive indicating that district court judges are 10.0% more likely to cast liberal votes when these questions arise.

However, if one examines the remaining models in Table 1, different patterns of behavior emerge. For example, Model 2 contains only cases involving criminal issues. For these cases, the variable *District Court Ideology* is not significant and neither is the variable *Appeals Court Ideology*. Based on this analysis, it is therefore apparent that individual ideology of judges does not influence their decisional calculus. Conversely, the control variables are significant and positive. District court judges are 3.9% more likely to render liberal decisions in the presence of a *Threshold Issue* and 6.7% more likely to cast liberal votes when interpreting a *Federal Statute or Constitutional Issue*.

The results listed in Model 3 pertain to civil liberties cases, and, similar to Model 2, they indicate that the variable *District Court Ideology* is not statistically significant. Yet, unlike in criminal cases, district court judges are influenced significantly by *Appeals Court Ideology*. However, the coefficient leads to a nonsensical conclusion: District court judges are 15.5% more likely to render a liberal decision as the appellate panel becomes increasingly conservative. Additionally, Model 3 indicates that these judges are 4.7% less likely to cast liberal votes when encountering a *Threshold Issue*, but the presence of a *Federal Statute or Constitutional Issue* exerts no significant influence.

Finally, Model 4 presents the results on an analysis run exclusively on economic cases. Initially, one can determine that the variable *District Court Ideology* is statistically significant and negative. Examining the change in predicted probability reveals that as judges become more conservative the likelihood of a liberal decision decreases by 10.7%. Furthermore, the variable *Appeals Court Ideology* is not significant. Finally, the control variables *Threshold Issue* and *Federal Statute or Constitutional Issue* are significant and negative.

In sum, if one were to conduct empirical analyses on these data using standard probit models, the initial conclusions would not provide support that the courts of appeals influence the behavior of district court judges.

Table 1
Traditional Probit Models

	Coefficients (Robust Standard Errors) *Change in Predicted Probability*			
	Model 1: All Cases	Model 2: Criminal Cases	Model 3: Civil Liberties Cases	Model 4: Economic Cases
District Court Ideology	−.173***	−.103	−.184	−.197**
	(.057)	(.123)	(.133)	(.076)
	−.093	*−.012*	*−.059*	*−.107*
Appeals Court Ideology	.0998	−.049	.395*	.072
	(.092)	(.190)	(.214)	(.124)
	.049	*−.005*	*.155*	*.035*
Threshold Issue	−.087*	.286*	−.177*	−.115*
	(.050)	(.146)	(.099)	(.062)
	−.033	*.039*	*−.047*	*−.044*
Federal Statute or	.255***	.464***	.118	−.222***
* Constitutional Issue*	(.041)	(.085)	(.096)	(.056)
	.100	*.067*	*.035*	*.088*
Constant	−.238	−1.776	−.679	−.291
	(.121)	(.069)	(.085)	(.035)
N	5567	2256	873	2323
Log-likelihood	−2683.477	−547.104	−490.215	−1557.602
Wald χ^2	742.67	33.39	9.72	24.20
Probability > χ^2	.000	.000	.045	.000
Pseudo R^2	.137	.031	.010	.008
Correctly predicted (%)	75.3	87.3	74.6	59.2

Note: Dependent variable: directionality of decision (1 if liberal, 0 if conservative). Robust standard errors are calculated by clustering on the appellate circuit. Changes in predicted probabilities are calculated by manipulating the variable of interest from its minimum to maximum value and simultaneously holding the other variables constant at their minimum values.
*$p < .10$. **$p < .05$. ***$p < .01$.

Furthermore, the empirical results would lead to the conclusion that district court judges are not motivated by their individual ideological preferences in criminal or civil liberties cases. Consequently, the researcher might be led to some counterintuitive conclusions based on these initial results.

However, an examination of Table 2, which contains the results from the strategic choice probit models, indicates the errors of these initial conclusions.[22] As mentioned earlier, rather than including a variable to measure *Appeals Court Ideology* (as one would in a standard probit model), the strategic choice probit models initially estimate the behavior on appeal (i.e.,

Table 2
Strategic Choice Probit Models

	Coefficients (Robust Standard Errors)			
	Model 1: All Cases	Model 2: Criminal Cases	Model 3: Civil Liberties Cases	Model 4: Economic Cases
District Court Ideology	−.772**	.002	−.969**	−.285*
	(.350)	(.557)	(.338)	(.151)
Threshold Issue	−.364**	−1.372**	.402**	−.392*
	(.141)	(.605)	(.188)	(.144)
Federal Statute or	−1.799**	1.881***	−.993	−.176**
Constitutional Issue	(.699)	(.373)	(.821)	(.085)
Constant	−.443	.614	−.243	−.549
	(.048)	(.188)	(.144)	(.054)
N	5586	2256	873	2339
Null model (%)	44.1	76.6	46.3	59.6
Correctly predicted (%)	70.0	83.4	74.6	66.3
Reduction of error (%)	2.1	2.4	2.2	5.0

Note: Dependent variable: directionality of decision (1 if liberal, 0 if conservative).
*$p < .10$. **$p < .05$. ***$p < .01$.

the likelihood of the appellate panel rendering a liberal decision), and then use these predictions in the district court likelihood function. Consequently, the strategic choice probit models directly test whether the behavior of the district courts is affected by the decisions of the appeals courts. Stated another way, the strategic choice models directly test whether district courts are significantly influenced by their *anticipation* of the decision rendered by the courts of appeals. As my primary research question involves the extent to which district court judges potentially rule against their ideological preferences to avoid reversal when they anticipate a negative decision on appeal, the remaining discussion focuses on the ideological variable of interest: *District Court Ideology*.

The strategic choice probit models reveal that district court judges are significantly influenced by their individual ideological preferences in all instances, except when adjudicating criminal disputes. In Model 1 (all cases), Model 3 (civil liberties cases), and Model 4 (economic cases), the variable *District Court Ideology* is statistically significant and in the expected negative direction. Although this result alone is noteworthy, a more interesting finding occurs when one examines the changes in predicted probabilities for each equation, the results of which are presented in Table 3.

The four columns in Table 3 represent the potential situations encountered by district court judges: when they anticipate an affirmance on appeal to a conservative decision, when they anticipate a reversal on appeal to a conservative decision, when they anticipate a reversal on appeal to a liberal decision, and when they anticipate an affirmance on appeal to a liberal decision. Examining the changes in predicted probabilities for Model 1 (all cases) reveals that district court judges are 17.5% less likely to render a liberal decision when they anticipate that the appeals courts will affirm a conservative decision. Stated another way, these judges are substantially more likely to cast a conservative vote when they anticipate that the courts of appeals will affirm that decision. However, when the district courts anticipate the reversal of a conservative decision, the magnitude of influence for *District Court Ideology* decreases to 5.9%; district court judges are not as prone to rule conservatively when they anticipate a reversal on appeal. A similar pattern exists when the district courts anticipate potential responses to liberal decisions. When they anticipate that the appeals courts will affirm a liberal decision (last column of Table 3), they are 15.1% more likely to rule in a liberal fashion. However, when the district courts anticipate that their decisions will get reversed on appeal, the substantive impact of *District Court Ideology* decreases to 8.3%; district court judges are not as prone to rule liberally when they anticipate a reversal on appeal.

These results remain consistent when one examines civil liberties cases or economic cases. For the former, district court judges are 11.5% more likely to render liberal decisions when they anticipate an affirmance on appeal (and vice versa when they anticipate an affirmance to a conservative decision). Yet the magnitude of this influence decreases to 6.7% when district court judges anticipate a reversal by the appeals courts. In the latter cases (economic cases), district courts are 8.9% more likely to rule liberally when they anticipate an affirmance on appeal (and they are 15.9% less likely to rule liberally when they anticipate the appeals courts will affirm a conservative decision). However, when district court judges anticipate a reversal on appeal, they curtail the influence of ideology substantially (with a decrease to 3.1%).

Only in Model 2 (criminal cases) does this pattern change. In these cases, the influence of *District Court Ideology* was not statistically significant (from Table 2), and the predicted probabilities do not change across the columns. Therefore, one can conclude that district court judges do not anticipate how their criminal decisions will be treated on appeal. Additionally, given the lack of statistical significance for *District Court Ideology*, one can reasonably speculate that criminal cases do not provide district court judges with an opportunity to act according to their ideological preferences. Given

Table 3
Changes in Predicted Probabilities

	Strategic Choice Probit Model			
	When District Courts Anticipate an Affirmance on Appeal to a Conservative Decision	When District Courts Anticipate a Reversal on Appeal to a Conservative Decision	When District Courts Anticipate a Reversal on Appeal to a Liberal Decision	When District Courts Anticipate an Affirmance on Appeal to a Liberal Decision
All cases				
District Court Ideology	−.175	−.059	.083	.151
Criminal cases				
District Court Ideology	−.001	−.001	.001	.001
Civil liberties cases				
District Court Ideology	−.115	−.067	.067	.115
Economic cases				
District Court Ideology	−.159	−.031	.031	.089

Note: Changes in predicted probabilities are calculated by moving the variable of interest from its minimum to its maximum value and simultaneously holding the remaining variables at their minimum values.

the influence of juries during the criminal trial and the influence of laws such as the *Federal Sentencing Guidelines*, it is reasonable to conclude that criminal cases do not afford district court judges with the discretion to rule ideologically, let alone anticipate what might happen on appeal. This conclusion contrasts with those found by Songer et al. (1994) and Benesh (2002) who discovered that appellate judges were constrained by the Supreme Court in search and seizure or confession cases.

Conclusions

Do district court judges strategically anticipate decisions on appeal, and does this anticipation constrain their decisions? As the theoretical model indicates, if district court judges believe their preferences are similar to those of the appeals courts, then they can rule according to those preferences without fear of reversal. However, if the preferences of the district courts are contrary to the appellate panel, then the former may curtail their ideological proclivities and avoid a negative outcome on appeal.

The empirical results support the general predictions of the theoretical model, provided the data are analyzed in a strategic context. If one relies on a standard probit model to estimate statistical effects, then an important relationship between judicial ideology and strategic behavior is missed. Only by specifically modeling this strategic interdependence into the statistical estimation does one uncover the underlying reality. District court judges are significantly constrained by anticipated responses from the courts of appeals, generally speaking. If the federal trial judges anticipate a negative response on appeal, then they curtail their ideological influences (the magnitude of influence decreases by approximately one-half). This pattern remains consistent when one examines civil liberties and economic cases, but not for criminal cases. During the criminal trial, district court judges do not possess the discretion to act according to their ideological preferences, and consequently, do not anticipate how their decisions will be treated by the appeals courts.

Returning to the opening quote from Judge Graven, it appears as if district court judges do not possess as much discretion as his statements imply. According to the empirical results of this analysis, the hierarchical structure of the federal judiciary constrains individual judges from running amok at the trial level. This raises additional questions pertaining to the high affirmance rates exhibited by the appeals courts. Are these rates a function of constraints at the appellate level (such as heavy caseloads) or the result of strategic calculations on the part of district court judges? Additionally,

questions remain whether potential selection effects are present as approximately 20% of district court cases are actually appealed. To adequately address this question, future research should examine cases that are not appealed alongside those that are reviewed. In sum, other analyses are required to explore these questions and other possible manifestations of influence induced by the hierarchical structure of the federal judiciary. What is clear is that scholars must account for potential strategic interdependence among federal judges. Failure to include this aspect could lead to incorrect conclusions about the relationship of judges in the federal judicial hierarchy.

Appendix A
Quantal Response Equilibrium (QRE) Model of District Court Anticipation

To determine the equilibrium behavior of the actors, I rely on the QRE concept, where "best response functions become probabilistic (at least from the point of view of an outside observer) rather than deterministic. Better responses are more likely to be observed than worse responses" (McKelvey & Palfrey, 1995, 1998). Over time, the players are more likely to choose better strategies than worse strategies, but they do not always play the best strategy with a probability of one (McKelvey & Palfrey, 1998). Though the formal model may be represented in terms of complete information, QRE allows for players to possess limited amounts of private information, introducing variation in the probability of Player 1 choosing strategy A. The relaxed assumption of the QRE addresses my earlier concern about district court judges not being able to accurately determine the preferences of randomly assigned appellate panels. Although the district courts may be able to identify the general ideological preference of the circuit, the appeals courts will retain private information about the preferences of the three judges assigned to the appellate panel. This introduces a random component to the formal model, which measures the probabilistic calculation required of district court judges to determine the ideological preferences of the appellate panel. Likewise, the district courts will possess private information regarding their policy preferences and their fear of reversal. This private information allows for variation within the formal model's predicted responses, thereby facilitating empirical tests of my theoretical expectations.

Deriving the equilibrium probabilities for the actors, therefore, involves calculating expected utilities for the decisions—in relation to the decisions of the other actors—combined with a private information component. Returning to the game depicted in Figure 1, estimates are necessary for the expected utilities for the district courts U_{Dist} (C,C), U_{Dist} (C,L), U_{Dist} (L,C), and U_{Dist} (L,L) and for the appeals

(continued)

Appendix A (continued)

courts $U_{\text{App}}(C,C)$, $U_{\text{App}}(C,L)$, $U_{\text{App}}(L,C)$, and $U_{\text{App}}(L,L)$. Assuming that the random error component is independently and identically distributed (i.i.d.) normal, we can then "work up the game tree" to calculate the QRE probabilities. Let z equal the probability that appeals court will vote liberally after the district court has rendered a liberal decision (where Φ is the standard normal cumulative distribution).

$$z = Pr[U_{\text{App}}(L,L) + \pi_L > U_{\text{App}}(L,C) + \pi_C]$$
$$z = Pr[\pi_C - \pi_L < U_{\text{App}}(L,L) - U_{\text{App}}(L,C)]$$
$$z = \Phi\left[\frac{U_{\text{App}}(L,L) - U_{\text{App}}(L,C)}{\sqrt{s_{\pi L}^2 + \sigma_{\pi C}^2}}\right] \tag{1}$$

The probability that the appeals court chooses to render a liberal decision after the district court has ruled conservatively is represented by w:

$$w = \text{Pr}[U_{\text{App}}(C,L) + \pi_L > U_{\text{App}}(C,C) + \pi_C]$$
$$w = \text{Pr}[\pi_C - \pi_L < U_{\text{App}}(L,L) - U_{\text{App}}(L,C)]$$
$$w = \Phi\left[\frac{U_{\text{App}}(C,L) - U_{\text{App}}(C,C)}{\sqrt{\sigma_{\pi L}^2 + \sigma_{\pi C}^2}}\right] \tag{2}$$

In a similar fashion we can determine the equilibrium choice probabilities for the district court. Let t equal the probability that the district court casts a liberal vote. Estimating this probability requires a consideration of the utility of the appeals court on review. Thus, estimating t involves the following:

$$t = \text{Pr}[U_{rmDist}(L) + \pi_L > U_{\text{Dist}}(C) + \pi_C]$$
$$= \text{Pr}[\pi_L - \pi_C < U_{\text{Dist}}(L) + U_{\text{Dist}}(C)]$$
$$= \text{Pr}[\pi_L - \pi_C < wU_{\text{App}}(L,L) + (1-w)U_{\text{App}}(L,C) - zU_{\text{App}}(C,L) + (1-z)U_{\text{App}}(C,C)]$$
$$t = \text{Pr}\ \Phi\left[\frac{wU_{\text{App}}(L,L) + (1-w)U_{\text{App}}(L,C) - zU_{\text{App}}(C,L) + (1-z)U_{\text{App}}(C,C)}{\sqrt{\sigma_{\pi L}^2 + \sigma_{\pi C}^2}}\right] \tag{3}$$

Multiplying these choice probabilities, for all combination of actors' choices results in the equilibrium outcome probabilities depicted in Figure A1. As the outcome probabilities and expected utilities are functions of a set of explanatory variables and their corresponding parameters (the $X\beta$ coefficients), it is possible to calculate maximum likelihood estimates of the coefficients using an appropriate statistical model.

(continued)

Appendix A (continued)

Figure A1
Equilibrium Outcome Probabilities
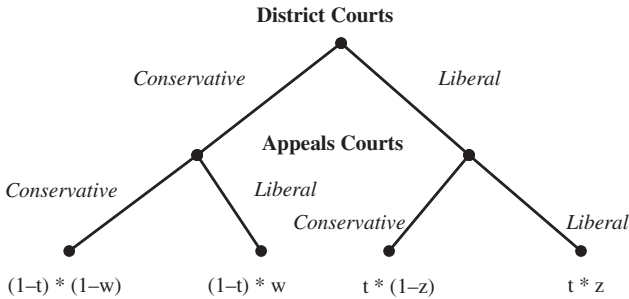
The outcome probabilities listed in Figure A1 assist in determining the equilibrium behavior of district and appeals court judges. If we use backward induction and work up the game tree as we did for the QRE probabilities, we can determine probabilistically the substantive behavior of judges. For appeals court panels, the choice to render a liberal decision (z) will be a function of their collective ideological preferences. This leads to the first testable hypothesis (the appellate panel hypothesis):

> *Appellate panel hypothesis:* Appeals court panels will render decisions according to their collective ideological preferences. Therefore, more liberal appellate panels will be more likely to rule liberally (z) and more conservative appellate panels will be more likely to rule conservatively ($1 - z$), ceteris paribus.

For district court judges who do not fear reversal, they receive greater utility by ruling according to their ideological preferences. Therefore, their decision calculus does not require strategically anticipating what might happen on review because $t \geq z$ in every instance. Therefore, these judges receive positive utility by voting ideologically regardless of the decision on appeal. Consequently, for liberal district court judges the equilibrium behavior is {L; C,L} and for conservative judges the equilibrium behavior is {C; C,L}. This leads to the second testable hypothesis (the no strategic anticipation hypothesis):

Appendix A (continued)

No strategic anticipation hypothesis: District court judges who do not fear reversal (or who believe the likelihood of reversal is low) will render decisions according to their ideological preferences. Consequently, as judges' ideologies become more liberal, the likelihood of ruling liberally increases ceteris paribus.[23]

As the likelihood of reversal increases, district court judges who fear reversal will become increasingly constrained from ruling ideologically. The QRE outcome probabilities reveal that fear of reversal occurs when $(1 - z) > t$ for liberal judges or when $z > (1 - t)$ for conservative judges. The fear of reversal becomes more pronounced as the inequality for z (or $1 - z$) becomes larger in relation to t (or $1 - t$). Consequently, the equilibrium behavior for liberal judges shifts from $\{L;L\}$ to $\{C;C\}$ as $1 - z$ increases; similarly for conservative judges the equilibrium behavior shifts from $\{C;C\}$ to $\{L;L\}$ as z increases. This leads to the second hypothesis (the fear of reversal hypothesis):

Fear of reversal hypothesis: District court judges who are motivated by a fear of reversal will be more likely to render decisions against their ideological preferences as the probability of reversal increases. Consequently, liberal judges will be more likely to rule conservatively (and conservative judges more likely to render liberal decisions) as the probability of reversal increases, ceteris paribus.

Appendix B
Full Strategic Choice Models

	Coefficients (Robust Standard Errors)			
	Model 1: All Cases	Model 2: Criminal Cases	Model 3: Civil Liberties Cases	Model 4: Economic Cases
District Court Equation				
District Court Ideology	–.772**	.002	–.969**	–.285*
	(.350)	(.557)	(.338)	(.151)
Threshold Issue	–.364**	–1.372**	.402**	–.392*
	(.141)	(.605)	(.188)	(.144)
Federal Statute or	–1.799**	1.881***	–.993	–.176**
Constitutional Issue	(.699)	(.373)	(.821)	(.085)
Appeals Court Equation				
Appeals Court Ideology	–.104	–.607**	–.369	–.189
	(.067)	(.291)	(.239)	(.141)

(continued)

Appendix B (continued)

	Coefficients (Robust Standard Errors)			
	Model 1: All Cases	Model 2: Criminal Cases	Model 3: Civil Liberties Cases	Model 4: Economic Cases
Panel Dissent	.314***	.917***	.495***	.503***
	(.060)	(.122)	(.168)	(.138)
Federal Statute or	−.403***	−.294	−.504***	−.175**
Constitutional Issue	(.069)	(.231)	(.171)	(.086)
Constant	−.443	.614	−.243	−.549
	(.048)	(.188)	(.144)	(.054)
N	11172	4518	1744	4678
Null model (%)	44.1	76.6	46.3	59.6
Correctly predicted (%)	70.0	83.4	74.6	66.3
Reduction of error (%)	2.1	2.4	2.2	5.0

Note: Dependent variable: directionality of decision (1 if liberal, 0 if conservative).
The dichotomous variable *Panel Dissent* is included as a control variable to measure when an appeals court decision is not unanimous.
*$p < .10$. **$p < .05$. ***$p < .01$.

Notes

1. Quoted in Rowland and Carp (1996, p. 1).

2. See Brehm and Gates (1997) for a more detailed explanation of the principal–agent model.

3. One must remember that the judicial hierarchy is not equivalent to other bureaucratic organizations as the Supreme Court does not possess authority over traditional sanctioning mechanisms, such as appointment, removal, promotion, or salary of inferior judges (Fiss, 1983).

4. For a contradictory argument, see Klein (2002) and Klein and Hume (2003).

5. One can speculate whether the change in behavior is caused by a fear of reversal (a reputation effect) or a desire to avoid increased caseloads (a workload effect) as a majority of reversals also includes remands to the lower court for reconsideration.

6. On some occasions the district courts render decisions in three-judge panels.

7. Though the model includes only two choices for both levels of the federal judiciary, in reality judges possess a range of policy and outcome options beyond these choices.

8. Future research is needed to determine whether this assumption is supported empirically.

9. To view a formal model of this relationship, using a Quantal Response Equilibrium, see Appendix A.

10. District court judges who fear reversal, but believe the likelihood of reversal is low will also render decisions according to their ideological preferences because of the belief that the appeals courts will affirm the decision.

11. This dataset is available at the University of Kentucky's S. Sidney Ulmer Project for Research in Law and Judicial Politics (www.as.uky.edu/polisci/ulmerproject).

12. Cases were selected if the variable DISTJUDG contained a valid identification number.

13. See Signorino (2001).

14. Signorino acknowledges that strategic choice models are deficient relative to traditional selection models in the assumption that errors or private information are independent. The strategic choice model does not capture correlation in the disturbances associated with each player's decision. "Substantively, this implies that [players] learn nothing about each other's incentives when viewing their own private information" (2002, p. 14).

15. Examples include Carson (2003), Carson and Marshall (2003), and their analyses of quality challengers entering congressional races against incumbent members.

16. This variable is calculated using ideology scores for the panel that heard the specific case on appeal. It is therefore the equivalent of assuming complete and perfect information for district court judges. Alternate specifications were run calculating both the circuit mean ideology and the circuit median ideology, with no substantive differences among the empirical results.

17. The models were also examined with the inclusion of a variable measuring the preferences of the Supreme Court to determine whether the justices exert an influence on lower court judge behavior. The results of the additional analyses are not significantly different (i.e., no substantive change to the original variables and no significant effect for the Supreme Court variable).

18. It is important to note that I am not claiming a directional hypothesis for this control variable; I do not expect the likelihood of a liberal (or conservative) vote to increase (or decrease) in the presence of a threshold issue.

19. Additionally, I test for effects across subsets of issues by examining relationships directly rather than including dummy variables for case issues.

20. To capture potential constraints exerted by local influences, I cluster the analyses based on the appellate circuit. Additional models were calculated by clustering on specific states, with no appreciable difference in the results.

21. Changes in predicted probabilities are calculated by moving the variable of interest from its minimum to its maximum value and simultaneously holding the remaining variables constant at their minimum values.

22. As I am primarily interested in district court behavior, only those coefficients are included in Table 2. The full strategic choice probit models also include coefficients for appeals court behavior. These are listed in Appendix B.

23. District court judges who fear reversal, but believe the likelihood of reversal is low will also render decisions according to their ideological preferences because of the belief that the appeals courts will affirm the decision. However, the equilibrium behavior becomes $\{L;L\}$ for liberal judges and $\{C;C\}$ for conservative judges.

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