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What Do Federal District Judges Want? An Analysis of Publications, Citations, and Reversals

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Evidence from a data set of federal district judges from 2001 and 2002 suggests that district judges adjust their opinion-writing practices to minimize their workload while maximizing their reputation and chance for elevation to a higher court. District judges in circuits with politically uniform circuit judges are better able to predict what opinions will get affirmed by the circuit court, leading to higher publication rates and a higher affirmance rate. In contrast, district judges in circuits with politically diverse circuit judges are less able to predict the preferences of the reviewing circuit court panel, leading district judges to publish fewer but higher-quality opinions in an effort to maximize their affirmance rate (*JEL* K40, K41, K49).

1. Introduction

A large literature has found that Supreme Court justices and federal appellate judges decide cases at least partly on the basis of ideological preferences. Scholarship on district court judges has been less extensive and its results less consistent. Some research finds that district court judges are influenced by ideological preferences, especially in sentencing and cases involving salient topics, but other research finds little or no correlation between ideological preferences and decisions (Rowland and Carp 1983, 1996; Ashenfelter et al. 1995).

The most plausible explanation for these different results is that district judges are more closely supervised than are judges higher up in the court hierarchy. Supreme Court justices do not face review and appellate court judges face review in only a tiny fraction of the cases they decide. By contrast, district judges are routinely subject to appellate review. Reversal is a burden for district judges, requiring them sometimes to conduct new trials and usually to hear new motions, while denying them their preferred outcome. Reversal is also potentially embarrassing and

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detrimental to a trial judge's prospects for promotion to the appeals courts. Judges on the appeals courts, by contrast, have little prospect of promotion.

We suspect that district judges care as much about political outcomes as appellate judges do but cannot advance their ideological preferences because they are subject to appellate review. Thus, we hypothesize that district judges care about minimizing their workload and maximizing their reputation by avoiding appellate reversal.[1] If district judges want to avoid reversal and appellate judges decide cases on the basis of political preferences, then district judges will decide cases on the basis of the political preferences of appellate judges.

However, it is not always easy for district judges to predict the political preferences of the appellate panel that ends up hearing an appeal. The reason is that appellate panels consist of randomly assigned appellate judges. Still, the preferences of a panel can be predicted as long as the pool of judges from which the judges are assigned is politically uniform. This leads us to make a critical distinction—between appellate courts that are politically diverse and appellate courts that are politically uniform.

When district judges can predict the political orientation of appellate panels because the circuit court is politically uniform, the district judges will decide cases in line with that political orientation. When district judges cannot predict the political orientation of appellate panels because the circuit court is politically diverse, they will adopt additional strategies to minimize reversal. They will publish fewer opinions—because the reversal of an unpublished opinion is less public than reversal of published opinions—and they will write higher-quality opinions. Where the political orientation of the appellate panel is unpredictable, a higher-quality opinion will have a lower chance of reversal, other things equal, because reversing a higher-quality trial court opinion likely requires greater effort on the part of the appellate panel. But given limits on time and resources, we predict that those district judges' reversal rate will be no better, and possibly worse, than those of judges who sit in circuits with predictable political orientations.

We test this theory of district judge behavior using a data set consisting of the decisions of 629 federal district judges over a 2-year period from 2001 to 2002. If, as other studies have shown, appellate judges decide cases in a politically biased way, then district judges who sit in politically diverse circuits will have more trouble predicting appellate rulings than district judges who sit in politically uniform circuits. As a result, judges in politically diverse circuits will have higher reversal rates and publish fewer opinions, but those opinions that are published will be of relatively high quality. Our results are roughly consistent with these hypotheses.

Section 2 surveys the literature on the motivation of judges. Section 3 describes our district judge data set and sets forth our metrics of district judge

1. The literature on judging frequently mentions the aversion of judges to reversal (Higgins and Rubin 1980; Drahozal 1988; Watson 1988). Research on the appeals courts, however, has found little evidence of reversal aversion (Klein and Hume 2003; Songer et al. 2003; Cross 2007). With respect to the district courts, there is some evidence of reversal aversion, but there has been minimal inquiry into the question (Cohen 1992).

performance, including publication rate, affirmance rate, and positive citations. Section 4 reports our statistical tests on the relationship between the metrics of district judge performance and circuit court heterogeneity. Section 5 concludes.

2. The Motivations of Federal District Judges

Much has been written about the motivations of judges. Many political scientists, many economists, and some law professors believe that judges maximize a utility function that includes standard elements such as leisure and wealth but also ideological preferences and general concern with one's reputation for legal ability (Posner 1993; Drahozal 1998). For judges at the top of the hierarchy, these assumptions lead to straightforward predictions that judges will decide cases in a way that advances their ideological biases. It is possible that a concern for reputation, or for avoiding legislative reversal (in the case of statutory decisions) or future judicial or constitutional reversal (in the case of constitutional decisions), constrains these judges, but these constraints are probably minimal. For intermediate appellate judges, there exists the possibility of reversal by the Supreme Court, but the probability of reversal is remote in the federal system (Bowie and Songer 2008). Numerous studies find evidence that political attitudes influence appellate decision making, though they cannot rule out the possibility that appellate judges are also concerned about the legal quality of their opinions, which is the mainstream view among lawyers.[2]

The implications of this model for district judges are more complex.[3] A reasonable starting point based on the attitudinal model of Segal and Spaeth (2002) is that district judges, like appellate judges, have preferences or ideal points and that, if they were unconstrained, they would decide cases so as to advance their preferences. However, district judges are constrained: Unlike appellate court judges, whose opinions are subject only to discretionary (and occasional) review by the Supreme Court, district court decisions are subject to mandatory (and routine) review by circuit courts. As Randazzo (2008) points out, when a district judge decides a case to advance her ideological preferences and is reversed, she has accomplished exactly nothing, except to give herself more work, as she will often have to hold additional hearings or even conduct a new trial. If district judges care at least a little about the amount of work they have, and deciding cases in a timely fashion, then they will have an incentive to decide cases so as to avoid reversal. To minimize reversals, district courts need to predict how the appellate panel will react to their decision and then make a decision that is consistent with that prediction.[4]

2. The literature has become too vast to cite. For seminal work, see Segal and Spaeth (2002).

3. See Baum (1997: 24–25).

4. Conceivably, district judges can advance their ideological preferences that are counter to those of the appellate court by making biased rulings about the facts, which appellate courts can review only with great difficulty. Although there is some evidence for this conjecture (Schanzenbach and Tiller 2007), it is difficult to test. Rulings about facts involve subjective judgments about the credibility of witnesses and the coherence of narratives that cannot be independently verified.

One might respond that district courts should care more about Supreme Court review than about review by an appellate panel because the Supreme Court has the power to reverse the decisions of appellate panels. Thus, the district court should decide cases on the basis of predictions of how the Supreme Court will react to its decisions. However, the probability of review by the Supreme Court is extremely low. In 2002, almost 350,000 cases were filed in the district courts. By contrast, the Supreme Court decides about 70 cases per year. For that reason, a district court will rationally ignore the probability that the Supreme Court will modify decisions of appellate panels. The same point can be made about en banc review of appellate panels. En banc review is extremely rare (about 80–90 cases per year for all circuits in the aggregate), and therefore unlikely to affect a rational district court's estimate of the probability that its decisions will be reversed.[5]

District judges differ from appellate judges in another respect. District judges have a greater chance of promotion than appellate judges do, and promotion brings with it more money, higher status, and better working conditions.[6] We suspect that district judges who are repeatedly reversed will have less chance of being promoted.[7] It is possible that a district judge who decides cases in an ideologically biased way and is repeatedly reversed will be attractive to a president with the same ideology who has a majority or supermajority in the Senate. But such alignment is unusual, and even when it occurs, the minority party can use the judge's reversal rate to make the case that she is incompetent.[8]

Accordingly, we hypothesize (consistently with Randazzo 2008) that instead of focusing on advancing an ideological agenda, district court judges will focus on minimizing their workload while at the same time maximizing

5. Research on the determinants of en banc review has been sparse. Among the exceptions are Giles et al. (2007) and George (1999).

6. Over the period 1950–2000, the federal trial courts have been the primary site from which appeals court judges have been selected, with roughly 40% of the appeals courts positions being filled by former trial judges (Savchak et al. 2006; Swenson 2006). Over the most recent decade, however, this trend may have diminished. Only four of the district judges in our 2001–2002 data set had been elevated as of December 31, 2008, suggesting a downward trend in elevations from the district courts. However, the period between January 1, 2009 and June 1, 2010 has seen this trend turn around with seven of the nine appointments to the appeals courts being from district courts.

7. In one of the few studies that examines this question, Higgins and Rubin (1980) found that a judge's reversal rate did not affect promotion prospects. However, the Higgins and Rubin study examined a relatively small data set and one from over two decades prior to ours. We suspect that judges have a greater fear that reversal rates will be used against them today, as occurred with Justice Sotomayor, than was the case in prior decades.

8. Savchak et al. (2006: 490) find that a district court publishing opinions in line with the sitting president's ideological preferences produces only a small positive effect on the probability of elevation.

their general judicial reputation through a lower reversal rate. Anecdotal evidence suggests that district judges care about their reversal rate and about case management—both easily measured by outsiders (Knight and Gulati 2010). This evidence is consistent with the assumption that district judges hope to be elevated and also the assumption that they compete for status, which is based on these easily measurable metrics (Posner 2008).[9] Reversal implies that a judge is not legally skilled; it also produces more work. Judges who fall behind on their dockets will annoy litigants, government officials, and their colleagues, who may believe that those judges are shirking.[10]

If all this is true, district judges will not decide cases in a manner that promotes their ideological preferences; they will decide cases in a manner that promotes the ideological preferences of the appellate court.[11] For example, Democratic district judges will produce liberal case outcomes when they sit in circuits dominated by Democratic appellate judges, and they will product conservative case outcomes in circuits dominated by Republican appellate judges. This may explain why studies to date have not consistently found that district court judges decide cases in a way that advances their ideological preferences (e.g., Hettinger et al. 2006: 98). If they did, then it would be impossible to reconcile this fact with the high affirmance rate (around 90%) and the fact that appellate judges decide cases in a way that reflects their ideological biases. Except when they sit in a circuit with appellate judges who share their ideological preferences, district judges must choose between deciding cases that promote their ideological preferences and enjoying a high rate of affirmance. Because the former choice just means reversal and ultimately the failure to promote their ideological preferences,

9. See Judicial Nomination Sent to Senate on a Party-Line Vote, L.A. Times, June 17, 2005, http://articles.latimes.com/2005/jun/17/nation/na-judge17 ("Some senators and liberal groups have consistently opposed Boyle, arguing that he has been reversed by higher courts too many times and that he has ruled unfairly on civil rights, women's rights and employees' rights."). And although they did not prevail, arguments about her high reversal rate were made by opponents of then-judge Sotomayor's nomination to the US Supreme Court (Mauro 2009).

10. One former federal district court judge we spoke to confirmed these assumptions. He said that trial judges, unlike appellate judges, must face litigants and their lawyers every day and know that their reputation will significantly affect their interactions with lawyers. Trials judges know that if they are frequently reversed, their rulings will be frequently appealed, leading to more work on remand and hence less time to focus on opinions, which will have more flaws, in a downward spiral.

11. There is similarly evidence that elected and appointed state judges will suppress their ideological preferences so as to be reelected or reappointed by people with different ideological preferences (Shepherd 2009a, 2009b).

there is no choice at all. District judges will suppress their ideological leanings and decide cases so as to avoid reversal.[12]

Suppose, then, that the main factor determining a judge's reputation is his or her affirmance rate. If judges care only about their affirmance rate, then they will decide cases in a manner that they predict an appellate panel will approve. If the appellate panel's views are predictable, then all district judges will have 100% affirmance rates. District judges will simply decide in a way that conforms to the appellate panel's political biases (cf. Scott 2006: 163). If the appellate panel's views are diverse, then affirmance should drop below 100%. But the reason is not that district judges ignore the political biases of the appellate judges. The reason is that the district judges face greater uncertainty at the time they write their opinions as to the political makeup of the specific three-judge appellate panel that will eventually review the district judges' opinions (see Hettinger et al. 2006: 96).

In a diverse circuit, a number of options are open to a district court judge seeking to avoid the embarrassment of reversal. First, the judge can decline to publish an opinion. To be sure, the litigants can appeal an unpublished opinion, and the appellate court can reverse it. But we conjecture that reversal of

12. Higgins and Rubin (1980) and Ashenfelter et al. (1995) find no evidence that district judges are influenced by political preferences. See also Zorn and Barnes (2007). Sisk et al. (1998) examine a data set consisting of district court decisions on the constitutionality of sentencing guidelines and find no evidence that these decisions were influenced by the judges' political affiliations. The paper found some correlations between party affiliation and certain methodological approaches of the judges, but these correlations did not appear to reflect conventional political attitudes. Taha (2004) uses the Sisk et al. data set to test hypotheses concerning the determinants of a district judge's decision to publish an opinion and finds that younger judges with a prior political position and higher American Bar Association ratings are more likely to publish as are judges with smaller caseloads, longer tenure, and the potential for promotion (among other things). Schanzenbach and Tiller (2007) find that district judges' sentencing decisions can be predicted from their political orientation: Democrats give shorter sentences to those convicted of street crimes than Republicans do. Further, they find that Democratic judges grant downward departures in street crime cases under the sentencing guidelines to a greater extent when the circuit is Democratic than when it is Republican and to a greater extent than Republican district judges do (see also Schanzenbach and Tiller 2008). Rowland and Carp (1996) find some evidence that district judges' decisions reflect political orientation but do not test this hypothesis statistically. Randazzo (2008) examines a sample of district court cases decided between 1925 and 1996 in civil rights, economics, and criminal law cases. Randazzo finds that, in civil rights and economics cases, district judges temper their ideological tendencies where they conflict with those of the appeals court. Similar findings, however, do not show up with the criminal law cases he examines. Smith (2006) examines whether trial courts adjust their behavior in response to reversals by the appeals court. Using data from the D.C. Circuit on civil rights cases, he finds that trial court judges will initially attempt to advance their ideological preferences. However, if reversed by the appeals court, they adjust their behavior to bring it more in line with the preferences of the appeals court. Finally, using a nationwide sample, Boyd and Spriggs (2009) examine the citation patterns of the trial courts. Boyd and Spriggs predict that trial judges, because of their aversion to reversal, will calibrate their inclinations to cite Supreme Court precedent that they favor as a function of the ideological preferences of the intermediate appeals court. They do not, however, find evidence that the trial courts adjust their citation patterns to cite Supreme Court cases more positively or negatively as a function of where the appellate court sits on the ideological spectrum vis-à-vis those cases.

unpublished opinions is less embarrassing than reversal of published opinions.[13] Published opinions are seen as more important, and so an error is more important; and published opinions are better known, so the reversal will be more widely known (and thus have a greater effect on the district court judge's reputation). In addition, because unpublished opinions likely carry less influence with other judges, a circuit court may view a reversal of such an opinion as less important and therefore be less likely to reverse it, all other things being equal.[14] Although there are guidelines directing judges when to publish opinions, prior research suggests that these guidelines are at best considered suggestive by the judges (Songer 1988; Olson 1992). Judges appear to exercise significant discretion over whether to publish opinions. At the margin, therefore, district judges should publish less often when they face politically diverse appellate review.

Second, the judge can put more effort into writing an opinion. Appellate judges' willingness to overturn an opinion is likely to be at least partly a function of its quality. Given that the appellate panel will have to exert greater effort to reverse a high-quality trial court opinion, resource-constrained appellate panels will be less likely to reverse high quality trial court opinions.[15] In order to produce higher-quality opinions, district judges in politically diverse circuits will need to devote less time to other activities. They might work harder and have less time for leisure; or they might spend less time on case management.

Accordingly, we predict that district judges in more diverse circuits publish fewer opinions than district judges in more uniform circuits, but that their published opinions are higher quality.

A final point is that appeal takes place only if the disappointed party chooses to appeal. Litigants may settle rather than appeal. One concern is that litigants will be more likely to settle when they can predict the appellate outcome. This means that appeals will be rare in uniform, predictable circuits and common in diverse, unpredictable circuits. It also means that district courts will have a reduced incentive to exert effort on opinion writing in predictable circuits—even if they falsely predict the appellate outcome, it does not matter because the parties will settle (i.e., the winner at the district level will agree to an unfavorable settlement because she expects to lose at the appellate level). This

13. A retired judge described the phenomenon to us in the following fashion: "District judges make a choice when they decide to send an opinion to F. Supp. for publication. That is telling the world that the judge put extra effort into this opinion . . . some even refer to F. Supp as the vanity press for judges. The judge is choosing to flag the opinion for attention. It does not look good if the case gets reversed. All of this changed after the E-Government Act though. Now, everything is available on the internet."

14. For a discussion and some ambiguous evidence on the publication decision, see Rowland and Carp (1996).

15. Along these lines, Hoffman et al. (2007) suggest that district court judges are more likely to explain their reasons for a decision when those decisions are subject to the risk of reversal (decisions on certain types of motions, e.g., denials of motions to dismiss, are not subject to the risk of appeal as contrasted with grants of motions to dismiss).

selection effect strengthens our predictions, however. District judges in unpredictable circuits will put more effort into their opinions, leading to fewer published opinions that are higher quality.

We also speculate that district judges in circuits with higher-quality appellate courts will publish more opinions and higher-quality opinions. Because low-quality appellate courts will erroneously reverse high-quality opinions and affirm low-quality opinions, district judges gain little by writing higher-quality opinions. District judges will also, at the margin, decline to publish an opinion rather than go to the trouble of publishing it and take the risk that it will be erroneously reversed. This reasoning suggests that when both the diversity and quality of appellate courts increase so should the number and quality of the opinions of the district courts.

The net effect of a diverse circuit court on a district judge's overall reversal rate is unclear. On the one hand, in a diverse circuit, it is more difficult to predict the appellate court review panel, leading to a higher reversal rate. On the other hand, efforts on the part of the district judge to publish fewer opinions and to focus on writing (or selecting) higher-quality opinions for publication will lead to a lower reversal rate. We conjecture that, because of time and resource constraints, district judges in diverse circuits will likely have a higher reversal (and thus lower affirmance) rate compared with judges from nondiverse circuits.

3. Data Set

Our data set consists of information about the decision making of all the 629 federal district judges who held office in 2001 or 2002. In 2001 and 2002, there were 665 judgeships; with vacancies, there were about 602 judges in 2001 and 597 judges in 2002.[16] Changes in personnel bring our total up to 629. An observation is a single judge. Because of missing information for some dependent variables, our usable data set ranges from 533 to 606, depending on the type of dependent variable. Table 1 provides a breakdown of our district judges by circuit along with circuit-level information about our main dependent variables. Table A1 in the Appendix provides definitions, sources, and summary statistics for all the variables.

3.1 Dependent Variables

We use three dependent variables. *Publication Rate* refers to the propensity of a judge to publish opinions. We define Publication Rate as the number of published opinions for a judge divided by the average number of filings per judge in that judge's district (total filings for the district divided by number of

16. See Administrative Office of the US Courts, Federal Court Management Statistics, http://www.uscourts.gov/cgi-bin/cmsd2002.pl. We calculate number of judges by subtracting from the number of judgeships the number of vacant judgeship months divided by 12.

Table 1. District Judges By Circuit

Circuit	Number of district judges	Percent	Publications per case	Affirmance Rate	Positive citations per case
1	28	4.5	0.06	0.92	1.48
2	71	11.3	0.04	0.92	1.41
3	55	8.7	0.02	0.92	1.86
4	51	8.1	0.02	0.94	1.57
5	72	11.5	0.01	0.94	1.86
6	63	10.0	0.02	0.91	1.59
7	49	7.8	0.02	0.94	1.24
8	42	6.7	0.02	0.93	1.17
9	90	14.3	0.01	0.89	2.52
10	35	5.6	0.02	0.81	1.77
11	60	9.5	0.01	0.91	2.05
DC	13	2.1	0.11	0.91	2.51
Total	629	100.0			
Mean			0.02	0.91	1.76

judgeships in that district).[17] We take this approach because we do not know how many unpublished opinions a particular judge issues. However, this approach is reasonable because filings are divided evenly among judges, excluding perhaps the chief judge, because the chief judge has administrative duties. To control for this, we include a dummy variable if a judge was a chief judge during our period.

There are two possible objections to this measure. First, a filing can result in a third category—nonopinion eligible disposition such as a settlement or voluntary dismissal. Some judges may be more effective than others at persuading parties to settle or withdraw their cases. However, this problem should not affect our empirical test. We argue that judges are less likely to publish opinions when they are uncertain about how an appellate court will react to their decision. They can avoid publishing opinions by not publishing them; even better, they can avoid review altogether if they can persuade parties to settle. A judge facing an unpredictable appellate court should therefore obtain more settlements as well as issue more unpublished dispositions and hence (consistent with our initial hypothesis) have a lower publication rate where the denominator is number of filings.

17. By published opinions, we mean opinions that are available in the published reports issued by Westlaw. Although Westlaw can publish whatever opinions it wants to publish, anecdotal reports suggest that Westlaw simply publishes whatever opinions judges choose to designate as published opinions. In recent years, because of the widespread availability of judicial decisions on the electronic databases, and particularly the passage of the E-Government Act, the distinction between published and unpublished opinions may have become less important. However, we suspect that the choice to send an opinion for inclusion in the print version is still an important one that reveals information about the case in question and the judge. That said, we constrain our data base of opinions to roughly the period immediately prior to the passage of the E-Government Act in late 2002. See E-Government Act of 2002 (Pub.L. 107–347, 116 Stat. 2899, 44 U.S.C. § 101, H.R. 2458/S. 803) (enacted December 17, 2002, with an effective date for most provisions of April 17, 2003).

Second, the number of filings includes remands. Thus, an unsuccessful judge who is repeatedly reversed will have a contaminated denominator. However, the number of remands is trivial compared with total filings, so the degree of contamination should be small.

Affirmance Rate equals the number of published opinions that were not reversed divided by the number of published opinions. Our definition treats opinions that were not appealed as implicitly being affirmed.[18] The affirmance rate variable does not fully capture a judge's success in terms of having decisions upheld: Circuit courts can affirm and reverse unpublished dispositions as well. However, because published opinions likely reflect more important cases, are more carefully written, and are more widely read, the affirmance rate of published opinions does reflect an aspect of a judge's reputation.

Positive Citation Rate refers to the average number of positive outside-circuit citations (including federal appellate and trial courts, and state courts) to a judge's published opinions as tracked by Westlaw. As is common in the citation literature, we use outside-circuit citations rather than total citations (including in-circuit citations) because in-circuit citations might reflect intracircuit norms. To check robustness, we use various other measures of opinion quality, including law review citations and the difference between positive and negative outside-circuit citations.

There are some interesting variations among the circuits. Table 1 shows that district judges in the D.C. Circuit publish more frequently than district judges in other circuits. This is intuitive: The District of Columbia produces a lot of important government-related cases while having a small population that would generate run-of-the-mill litigation such as property disputes and prison litigation.[19] There is little variation in affirmance rate, except that district judges in the 10th Circuit are affirmed much less frequently than other district judges. Finally, district judges in the D.C. Circuit and the ninth Circuit write higher-quality opinions than judges in the other circuits. We do not have explanations for these last two patterns but they are interesting and suggest avenues for further research.

3.2 Independent Variables

Following the literature, for each of our district judges, we include demographic variables, experience variables, the salience of the average case heard by a judge, and political variables (the Judge Control variables). Our demographic variables include indicator variables for a female judge (*Female*), black judge (*Black*), and judges of other minorities (*Other Race*). We include these control variables because of evidence that judges that belong to these demographic groups decide certain cases differently from white males (Boyd

18. This is not ideal because settlements are treated as affirmances even though the trial court decision might have been reversed if the appeal had taken place. We use appeals data to check for robustness in Part 4.2.

19. Of course, not all prison litigation is trivial or frivolous. Although we did not specifically code for this, our impression is that most prison litigation, including efforts to have criminal convictions overturned, is routinely disposed of in short, perfunctory unpublished opinions.

et al. 2007) and because of the possibility that affirmative action has resulted in variation in characteristic of judges by demographic group.

Our experience variables include indicator variables for the judge's prior profession immediately before becoming a federal district court judge as follows: whether the judge worked as a judge, such as a magistrate judge, prior to becoming a federal district court judge (*Prior Judge*), the judge worked as a prosecutor (*Prior Prosecutor*), and the judge worked in private practice (*Prior Private Practice*). We include these control variables because a judge with previous experience as a magistrate or prosecutor may have more ability to predict how appellate panels will decide cases. To capture the salience of a judge's mix of cases, we develop a variable (*Salient*) by dividing the judge's number of salient published cases—defined as those involving issues that frequently appear in newspapers[20]—by the judge's total number of published cases. We include this variable because a judge with more salient cases might predict that the appellate panel will give her decisions greater scrutiny.

For our political controls, we use an indicator variable for whether the judge was appointed by a democratic President (*Judge Democrat*) and a variable for the judge's experience in years defined as the difference between 2002 and the appointment year of the judge (*Judge Experience*). We also include in our Judge Controls an indicator variable for chief judge status during either 2001 or 2002 or both (*Chief Judge*) and an indicator variable for whether the judge attended one of the three top law schools as measured by US News in 1992—Harvard, Yale, and Stanford—which also were the three law schools most frequently represented among the circuit court judges in our sample (*Top School*).

For our tests, we also include variables relating to the circuit court of each of the district judges in our sample. Our focus is on the political composition of the circuit court. We hypothesize that district judges respond differently when faced with the prospect of review by a set of homogeneous circuit judges and when faced with review by diverse circuit judges. A district judge interested in maintaining a high affirmance rate for her published opinions will be better able to adjust her decisions and opinions to ensure affirmance if faced with a circuit of judges with relatively homogeneous preferences. In contrast, a district judge will have less ability to craft an opinion to cater to the interests of a specific panel of circuit judges to the extent the underlying pool of circuit judges for the specific circuit is more heterogeneous in their case outcome preferences.

We use three measures of circuit heterogeneity based on a data set of active federal circuit court judges from 1998 to 2000 developed by Choi and Gulati (2004). First, we measure the diversity among circuit court judge political ideology. We use the President who appointed each circuit court judge as a proxy for her political ideology (Democrat or Republican). We then

20. Salient cases are those involving church and state, campaign finance, federalism, first amendment, and other constitutional rights (Choi and Gulati 2008, which relies on the methodology of Epstein and Segal 2000).

compute the fraction of a circuit that consists of Republicans, giving us a number ranging from 0 to 1. We then transform this number into a *Circuit Diversity* measure by using a function that maps the percentage of judges with a particular political affiliation to a value from 0 (all judges have the same affiliation) to 1 (a 50–50 split).[21]

Second, we compute the mean ratio of published dissents to published majority opinions for circuit judges in a particular circuit (*Circuit Dissent*).[22] The more a judge dissents, all other things being equal, the more likely the judge has differing views from other judges in the circuit. The more heterogeneous the group of circuit court judges, in turn, the harder it will be for a district court judge to predict the preferences of any specific panel that may review the district judge's opinions.

Third, we use a measure of circuit judge independence based on the tendency of circuit judges to write opinions that disagree with copartisans when the pool of judges provides opportunities to do so. We define an "opposing opinion" as either a published majority opinion when a dissent exists or a published dissent when a majority exists. We assume that a judge exhibits independence when she writes an opposing opinion against a copartisan. More independent judges may make decisions less along lines based on political affiliation and more on idiosyncratic personal views, leading to greater heterogeneity in outcomes across different judges in the same circuit.

To compute our independence measure, we define Opposite_Party as the number of opposing opinions written, by the circuit judge of interest, against a circuit judge of the opposite party divided by the number of opposing opinions written against a circuit judge of either party from 1998 to 2000. This variable measures propensity to side with copartisans. Not all opposing opinions are driven by the ideology of the opposing judges. A judge who dissents at random would dissent 70% of the time against an opposite party judge if the background pool of majority opinions consisted of 70% opposite party authored opinions. To take into account the background pool of opinions, we define Opposite_Pool as the total number of published majority opinions authored by an opposite party judge divided by the total number of majority opinions authored by either an opposite or same party judge (not including the judge in question) from 1998 to 2000.

We define Independence for a specific circuit judge as Opposite_Pool minus Opposite_Party. A more negative Independence score corresponds to a judge who writes opposing opinions against opposite party judges more frequently than the background pool of majority opinions authored by opposite party

21. Circuit Diversity is computed as follows. Call the fraction of republican judges in the circuit (determined for the 1998–2000 time period) Republican Fraction. If Republican Fraction is less than or equal to 0.5, we define Circuit Diversity as $2 \times$ Republican Fraction. If Republican Fraction is more than 0.5, we define Circuit Diversity as $2 + (-2 \times$ Republican Fraction). Under this formulation, if the circuit is all Republican (so Republican Fraction equals 1), Circuit Diversity will equal 0. If the circuit is all Democrat (so Republican Fraction equals 0), Circuit Diversity will equal 0. If Republican Fraction is equal to 0.5 (so 50–50 division between Democrats and Republicans), Circuit Diversity will equal 1, the highest possible diversity.

22. Hettinger et al. (2006) also use this measure, and find, as we do, that circuits with a high rate of dissent are more likely to reverse district courts.

judges. Conversely, a more positive Independence score corresponds to an authoring judge who writes opposing opinions less frequently against opposite party judges compared with the background pool of opinions (and thus more frequently against copartisans). We treat a more positive Independence score as indicative of a more independent judge. To obtain an overall independence score for a circuit, we averaged the independence score of each judge sitting in the circuit from 1998 to 2000 (termed *Circuit Independence*).

We use three separate measures of circuit heterogeneity because none of them perfectly captures this phenomenon. The use of multiple measures allows us to test for robustness.

We also focus on a competing hypothesis—that district judges' political ideology determines how they decide cases. Suppose that appellate judges do not invariably reverse district court decisions that they disagree with on ideological grounds—perhaps because they care about the law or want to avoid appearing excessively political for reasons of reputation. If this is the case, district judges know that at least some of their opinions will not be reversed on political grounds. For that reason, district judges will be able to decide some cases in an ideological way. Of course, they will be caught sometimes. Accordingly, this hypothesis predicts more reversals as the ideological distance between a district judge and the (average of the) appellate court increases. In addition, district judges who disagree with appellate judges will be more likely to follow their own (the district judges') ideological inclinations when the circuit court is heterogeneous because then they have a chance at a lucky draw—they could be reviewed by a likeminded appellate panel even if most of the circuit has different views. When the circuit court is uniformly hostile, reverses will decline because the district court has less chance of getting the lucky draw.

To determine the importance of a district judge's political leanings relative to the political leaning of judges in the circuit court, we use a continuous measure of the circuit court judge's ideology obtained from Giles et al. (2001) [the "Giles, Hettinger and Peppers (GHP) Score"]. The GHP Score is based on the ideological preferences of the appointing President and home state senators and ranges from −1 (most liberal) to +1 (most conservative). The GHP Score is correlated with whether a judge is Republican (correlation coefficient = 0.89) and provides a continuous analog to our binary Republican v. Democrat classification of judges. We calculate the average GHP score for all judges active in each circuit court during the 1998 to 2000 period and perform a monotonic transformation to adjust the range of the average GHP score for the circuit to range from 0 (most conservative) to +1 (most liberal) (termed the "average transformed GHP score").[23] We then define Circuit GHP Distance as the absolute value of the average transformed GHP score for the circuit in question minus Judge Democrat. Circuit GHP Distance ranges from 0 to 1, where a 1 indicates the maximum possible difference between the political ideology of the district judge and the political ideology of the judges in the circuit court applicable for the district judge. For example, where the district judge is a democrat (so Judge Democrat = 1) and

23. We use the following transformation: (1 − GHP Score)/2.

the average transformed GHP score of the circuit in question is 1 (indicating all the circuit judges receive the most liberal GHP score), then the Circuit GHP Distance variable is equal to 0.

We also calculate a *Circuit Quality* variable based on the average outside-circuit citations of appellate opinions by circuit. As noted above, we are interested in the possibility that district judges write better opinions in higher-quality circuits than in lower quality circuits.

4. Results

4.1 Publication Rate

We should start with some background. The average judge in our data set is assigned 517 cases (or filings) per year. The judge will dispose of the vast majority of these cases—507 opinions or about 98%—in unpublished opinions or dispositions. Thus, the average judge publishes only 10 opinions per year or about 2% of the filings per year. The adversely affected party has the right to appeal an unpublished disposition, just as that party has the right to appeal a published disposition. On average, 27 dispositions (both published and unpublished), about 5%, are appealed.[24] On average, 8.5% of *published* opinions are reversed.[25] So the average judge publishes 10 opinions per year and in most years, one of those opinions will be reversed, whereas the others are either affirmed on appeal or settled. Note that the appeal rate for published opinions is necessarily higher than that for unpublished opinions. If the average judge publishes 10 opinions per year and at least one published opinion is reversed (and thus was appealed in the first place), then the number of published opinions that are appealed must range from 1 to 10. Because a total of 27 published or unpublished opinions are appealed, the number of unpublished opinions that are appealed must lie between 17 and 26 for an appeals rate (for unpublished opinions) of between 3% and 5%, and necessarily (unless all appealed unpublished opinions are reversed, which is clearly not the case) an even lower reversal rate. Clearly, judges face a much lower level of reversal for their unpublished opinions than they do for published opinions. This is no doubt because most of the cases that do not lead to publication are trivial or frivolous.

This pattern assumes that appellate courts do not rigidly follow a rule of affirming when opinions are unpublished. If that were the case, district judges who seek to avoid reversal would simply refrain from publishing all opinions. We assume that district judges do not have this much discretion and would invite a scolding if they abused this process. Nonetheless, we assume that at the margin, district judges decline to publish opinions as a strategy for holding down their reversal rate. For that reason, we predict that judges in diverse, unpredictable circuits will be less likely to publish their opinions.

24. We do not have separate figures for appeals from published opinions and appeals from unpublished opinions. Data from the Administrative Office of the US Courts suggest that the appeals rate is about 19% for 2001. That data are not judge level, however, so we cannot use it.

25. About 30% of all appeals (from published and unpublished dispositions) are reversed.

We estimate equations on pooled data from 2001 to 2002 for our district judges using an ordinary least squares regression model with robust standard errors. Our theory predicts that judges in more heterogeneous circuits publish fewer opinions per filing and write longer opinions.

$$\text{Publication Rate}_i = \alpha + \beta_{1i}\text{Circuit Quality}_i + \beta_{2i}\text{Circuit GHP Distance}_i + \beta_{3i}\text{Circuit Diversity}_i + \sum \beta_{ki}\ \text{Judge Controls}_{ki} + \varepsilon_i$$

The model tests the hypothesis that district judges in politically diverse circuits (as measured by Circuit Diversity) publish fewer opinions than district judges in politically uniform circuits. We also use the model to test whether opinions were more likely to be published when a judge's political orientation and the circuit's political orientation were aligned (cf. Schanzenbach and Tiller 2007). One might predict that a Democratic district judge will be more likely to publish opinions when appellate review will be by Democratic circuit court panels (due to the lower risk of reversal). The problem with this theory is that if district judges want to avoid reversal, which would eliminate the effect of their decisions and create more work for them, they will swallow their ideological inclinations and decide cases in a way that advances the ideological inclinations of the appellate panel. Accordingly, the publication rate should not depend on political alignment.

We include the Circuit GHP Distance variable to control for the importance of a district judge's political leanings relative to the political leaning of judges in the circuit court. We also include the Circuit Quality variable to assess whether district judges publish more (or less) when faced with review by higher-quality circuit court judges.

Model 1 of Table 2 reports our results. We replace Circuit Diversity with Circuit Dissent as reported in Model 2. We replace Circuit Diversity with Circuit Independence as reported in Model 3. The regression results of the three models are consistent with our predictions. All three of the measures of heterogeneity—Circuit Diversity, Circuit Dissent, and Circuit Independence—have the correct sign (negative), and the first two are statistically significant at the 1% levels while the third is significant at the 10% level. Trial judges in diverse circuits are less likely to publish opinions than are judges in uniform circuits.[26]

26. We assume that judges control the decision whether to publish a decision in the West reporter. We received comments from some judges, however, that West may itself make the decision to publish decisions for a small fraction of opinions (if the judge noticed and thought that a particular opinion should not be published, however, she could ask for the opinion to be taken off the publication list). How a judge writes an opinion, nonetheless, will determine the probability of West selecting the opinion for publication (presumably, shorter opinions that set forth few reasons will be less likely to be published). Judges will therefore have an indirect ability to affect which opinions are selected by West. As well, so long as West's decision to publish is not correlated with our variables of interest (including Circuit Diversity, Circuit Dissent, and Circuit Independence) to the extent a significant fraction of opinions that are published are still designated by the judge for publication—our Publication Rate results will still be valid.

Table 2. Publication Rate

	Model 1	Model 2	Model 3
Circuit Quality	0.000877 (0.00141)	0.000559 (0.00143)	0.00187 (0.00154)
Circuit GHP Distance	−0.0321* (0.0168)	−0.0337** (0.0167)	−0.0317* (0.0170)
Circuit Diversity	−0.0221*** (0.00758)		
Circuit Dissent		−0.113*** (0.0190)	
Circuit Independence			−0.0275* (0.0157)
Female	−0.000336 (0.00347)	0.000321 (0.00338)	−0.000648 (0.00347)
Black	−0.00538 (0.00370)	−0.00434 (0.00364)	−0.00571 (0.00360)
Other Race	0.0188 (0.0124)	0.0187 (0.0120)	0.0194 (0.0125)
Judge Experience	0.0000538 (0.000248)	0.0000502 (0.000242)	0.000133 (0.000256)
Prior Judge	0.00441 (0.00538)	0.00587 (0.00540)	0.00273 (0.00523)
Prior Prosecutor	0.00256 (0.00638)	0.00255 (0.00631)	−0.000269 (0.00634)
Prior Private	−0.000216 (0.00527)	0.000923 (0.00520)	−0.00217 (0.00512)
Chief Judge	0.00355 (0.00344)	0.00356 (0.00337)	0.00299 (0.00348)
Top School	0.0141*** (0.00456)	0.0149*** (0.00438)	0.0157*** (0.00476)
Judge Democrat	0.00564* (0.00326)	0.00535* (0.00322)	0.00604* (0.00333)
Salient	−0.0183*** (0.00543)	−0.0190*** (0.00533)	−0.0193*** (0.00525)
Constant	0.0445*** (0.0125)	0.0456*** (0.0132)	0.0228* (0.0125)
N	533	533	533
R^2	0.086	0.120	0.073

Robust standard errors in parentheses; $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Dependent variable is the Publication Rate.

Shifts in all three measures of diversity correlate with economically important shifts in the propensity to publish opinions. The mean (median) Publication Rate is 0.0216 (0.0104). An increase of 0.190 (one standard deviation) in the Circuit Diversity variable correlates with a shift of −0.003709 in the Publication Rate dependent variable, corresponding to a −17.1% (−35.7%) decrease relative to the mean (median) Publication Rate. An increase of 0.067 (one standard deviation) in the Circuit Dissent variable correlates with a shift of −0.007237 in the Publication Rate dependent variable, corresponding to a −33.5% (−69.8%) decrease relative to the mean (median) Publication Rate. Lastly, an increase of 0.070 (one standard deviation) in the Circuit Independence variable correlates with a shift of −0.001867 in the Publication

Rate dependent variable, corresponding to a −8.6% (−18.0%) decrease relative to the mean (median) Publication Rate.[27]

We find no evidence that district judges in higher-quality circuits publish more than district judges in lower quality circuits. In all three models, the Circuit Quality coefficient is not significantly different from 0. In contrast, the Circuit GHP Distance coefficient is negative and significant at the 5% (Model 2) and 10% (Models 1 and 3) levels. This means that the district judges with political beliefs further from the average political beliefs of the reviewing circuit court are less likely to publish opinions. This suggests that district judges may try to "hide" politically inflected decisions by not publishing them, with the hope that the appellate court will pay less attention to unpublished opinions. To test whether Circuit GHP Distance may affect the impact of our circuit heterogeneity variables (Circuit Diversity, Circuit Dissent, and Circuit Independence) on the publication rate, we add corresponding interaction terms to the models of Table 2 (e.g., Circuit GHP Distance × Circuit Diversity to Model 1). Unreported, none of the interaction terms are significant. So if district court judges do try to sneak their political views into unpublished opinions, their propensity to do this is not affected by the greater chance of getting a lucky draw in diverse circuits than in uniform circuits.[28]

Two of our control variables are also interesting. Judges who went to top law schools publish more than other judges. This result (at the 1% level in all three models) is intuitive: These judges either have better educations or went to schools that selected them because of their greater ability.

In addition, judges whose dockets are dominated by salient cases are less likely to publish opinions. This result is significant at the 1% level in all three models. It seems plausible that judges would avoid publishing in politically sensitive cases as illustrated by the controversy when it was revealed that then-Judge Sotomayor had issued an unpublished opinion involving a

27. We also used Gary King's Clarify module for Stata that applies stochastic simulation techniques to estimate the change in the Publication Rate with all independent variables set at their mean and a one standard deviation increase in the Circuit Diversity, Circuit Dissent, and Circuit Independence variables. Using the Clarify module, we find that an increase of 0.190 (one standard deviation) in the Circuit Diversity variable correlates with a shift of −0.004241 in the Publication Rate dependent variable, corresponding to a −19.6% decrease relative to the mean Publication Rate. An increase of 0.067 (one standard deviation) in the Circuit Dissent variable correlates with a shift of −0.007567 in the Publication Rate dependent variable, corresponding to a −35.0% decrease relative to the mean Publication Rate. An increase of 0.070 (one standard deviation) in the Circuit Independence variable correlates with a shift of −0.001909 in the Publication Rate dependent variable, corresponding to a −8.8% decrease relative to the mean Publication Rate. Information on the Clarify Stata module is available at http://gking.harvard.edu/clarify/docs/clarify.html.

28. We also test whether Democrat district judges are more (or less) likely to respond to circuit court heterogeneity compared with Republican district judges. To the respective models in Table 2, we add an interaction term between Judge Democrat and Circuit Diversity, Circuit Dissent, and Circuit Independence. In the models, none of the interaction terms are significantly different from 0. Moreover, the sums of Judge Democrat + Judge Democrat × Circuit Diversity, Judge Democrat × Judge Democrat × Circuit Dissent, and Judge Democrat + Judge Democrat × Circuit Independence are not significantly different from 0, indicating there are no differences in the response between Democrats and Republican district judges to circuit heterogeneity in the Publication Rate models.

politically charged reverse discrimination case. Judges who care about their reputation (and/or hope to be elevated to the appellate court) might seek to avoid publishing in salient cases because such opinions carry a high downside risk—although, as the Sotomayor controversy illustrates, this strategy might backfire and cause people to believe that the judges are trying to conceal controversial decisions.

In sum, our results are consistent with our hypotheses that district judges in more ideologically diverse circuits publish fewer opinions than district judges in less ideologically diverse circuits.[29]

29. As a robustness test, we reestimate the models in Table 2 with a Tobit model to take into account that the Publication Rate variable is bounded by 0 and 1. Unreported, we obtain similar qualitative results as in Table 2. Circuit Diversity and Circuit Dissent are negative and significant at the 1% level. Unlike in Table 2, however, Circuit Independence is negative but now insignificant. Circuit GHP Distance is negative and significant at the 10% level in all the models.

Although Publication Rate in theory can range from 0 to 1, in practice most of the observations are close to 0. As a robustness check, we reestimated the models in Table 2 using the Stata fmlogit model that fits by quasi maximum likelihood a fractional multinomial logit model following the model proposed by Papke and Wooldridge (1996). We obtain similar qualitative results as in Table 2. Circuit Diversity and Circuit Dissent are negative and significant at the 1% level; Circuit Independence is negative and significant at the 10% level. Circuit GHP Distance is negative with significance ranging from the 5% to 10% levels.

As another robustness test, we reestimate the models in Table 2 with errors clustered by district court to control for district-wide factors that may correlate with the errors for all judges in the district. We obtain similar qualitative results as in Table 2. Circuit Diversity is negative and significant at the 10% level and Circuit Dissent is negative and significant at the 1% level. In contrast, Circuit Independence is negative but not significant. As well, unlike the models in Table 2, Circuit GHP Distance is negative but not significant in the models.

Older district judges may not care about their prospect for promotion to a higher court and thus not alter their behavior to improve their promotion chances. To test this possibility, we include an indicator variable in the models in Table 2 equal to 1 if the judge is older than 60 years in 2000 and 0 otherwise. Unreported, we obtain similar qualitative results as in Table 2. In addition, none of the coefficients on the indicator variable for age greater than 60 are significantly different from 0.

We try a measure of circuit heterogeneity based on the dispersion of GHP Scores among judges in the reviewing circuit for a particular district court judge. As our measure of dispersion, we define Large GHP Dispersion as equal to 1 if the variance of circuit judge GHP scores is greater than the median and 0 otherwise. Using an indicator variable to measure dispersion minimizes the effect of outlier judges in determining the overall level of dispersion. We substitute Large GHP Dispersion for the Circuit Diversity variable in Model 1 of Table 2. Unreported, the coefficient on Large GHP Dispersion is not significantly different from 0. This result is inconsistent with our finding that greater circuit heterogeneity is correlated with a lower Publication Rate. It is possible that district court judges focus more on the specific party affiliations of the circuit court judges (a more visible measure of ideological affiliation than the GHP score) in determining the unpredictability of the circuit court in making their determination on how much effort to put into writing published opinions.

Patent appeals go to the Federal Circuit. The presence of patent cases in our data set, therefore, may introduce bias in our regression results for the circuit heterogeneity variables (which are defined based on the circuit judges for the circuit in which the district judge sits). To test whether the presence of patent cases may affect our results, we omit all intellectual property cases when computing the Publication Rate for our district judges and reestimate the models in Table 2. We obtain the same qualitative results as in Table 2.

4.2 Affirmance Rate

The next prediction of our theory is that judges in diverse circuits will enjoy a lower rate of affirmance than judges in uniform circuits. Our theory is not unambiguous about this prediction, however. It is possible that judges in diverse circuits will exert greater effort on fewer published opinions in order to secure a higher affirmance rate for those published opinions. Still, given the other obligations constraining a judge's time, at the margin the affirmance rate should not rise with circuit heterogeneity—it should stay the same or decline. Again, we estimate equations on pooled data from 2001 to 2002 for district judges using an ordinary least squares regression model with robust standard errors clustered by district court.

$$\text{Affirmance}_i = \alpha + \beta_{1i}\text{Circuit Quality}_i + \beta_{2i}\text{Circuit GHP Distance}_i + \beta_{3i}\text{Circuit Diversity}_i + \sum \beta_{ki}\text{Judge Controls}_{ki} + \varepsilon_i.$$

To test the impact of higher-quality circuit court review, we include Circuit Quality as a measure of the average quality of the reviewing circuit judges. To test the importance of the political leanings of the district judge relative to the circuit judges, we include the Circuit GHP Distance variable. To test the impact of circuit judge political diversity, we include our Circuit Diversity measure (Model 1). The model includes the same Judge Controls as in the Publication model above. We also estimate models replacing Circuit Diversity with the Circuit Dissent (Model 2) and Circuit Independence (Model 3) alternate measures of circuit heterogeneity.

Some of the results in Table 3 are consistent with our prediction. When circuit heterogeneity increases, affirmance rates decline. However, the results are not robust. The coefficient on Circuit Diversity is, as predicted, negative and significant at the 1% level. The mean (median) Affirmance Rate is 0.915 (0.950). An increase of 0.190 (one standard deviation) in the Circuit Diversity variable is associated with a shift of −0.0198 in the Affirmance Rate-dependent variable, corresponding to a −2.2% (−2.1%) decrease relative to the mean (median) Affirmance Rate.[30] On the other hand, the coefficients on our other measures of circuit heterogeneity, Circuit Dissent and Circuit Independence, are not significantly different from 0, and the coefficient for the latter is the wrong sign. And, indeed, given that our theory is that district judges in diverse circuits would use extra effort to overcome the disadvantage, it is not

30. We also used Gary King's Clarify module for Stata that applies stochastic simulation techniques to estimate the change in the Affirmance Rate with all independent variables set at their mean and a one standard deviation increase in the Circuit Diversity variable. Using the Clarify module, we find that an increase of 0.190 (one standard deviation) in the Circuit Diversity variable correlates with a shift of −0.0198 in the Affirmance Rate-dependent variable, corresponding to a −2.2% decrease relative to the mean Affirmance Rate. Information on the Clarify Stata module is available at http://gking.harvard.edu/clarify/docs/clarify.html.

entirely clear whether we should expect an effect.[31] Most of the other independent variables in the models of Table 3, including Circuit Quality, are not significantly different from 0.[32]

Not all reversals impose a net cost on district judges. A reversal may signal to other judges and to the public that the district judge took a principled stand—particularly where the circumstance and facts of the case indicate the circuit court's reversal was based on the circuit court's own ideological predilections. We think nonetheless that such cases will likely be the exception rather than the rule. At the margin, a desire to avoid reversals and the extra work entailed by

31. We checked for robustness by running Tobit regressions to take into account that the Affirmance Rate variable is bounded by 0 and 1. The Tobit regressions produced similar results in qualitative terms. Circuit Diversity is negative and significant at the 1% level; Circuit Dissent is not significantly differently different from 0. Unlike the models in Table 3, however, the coefficient for Circuit Independence is now positive and significant at just under the 10% level. In the Tobit regressions, the presence of more independent minded judges at the circuit court level is correlated with a higher probability of an affirmance. This result is inconsistent with our hypothesis that judges will face a lower probability of an affirmance in more heterogeneous circuits. The significance, nonetheless, is only at the 10% level and Circuit Independence was not significant at conventional levels in our reported regressions in Table 3 (where it was significant at just above the 10% level).

As another robustness test, we also clustered errors by district in the regressions and found similar qualitative results. Circuit Diversity is again negative and significant at the 1% level; neither Circuit Dissent nor Circuit Independence is significantly differently different from 0. Unlike the models in Table 3, the coefficient on Circuit CHP Distance is negative and now significant at the 10% level, indicating that district judges with political leanings different from the average circuit court judge correlate with reduced affirmance rates.

To test the importance of district judge age, we include an indicator variable in the models in Table 3 equal to 1 if the judge is older than 60 years in 2000 and 0 otherwise. Unreported, we obtain similar qualitative results as in Table 3 for our circuit heterogeneity variables (Circuit Diversity is negative and significant at the 1% level). Similar with Table 3, none of the Circuit GHP Distance coefficients are significantly different from 0. In the reestimated Models 1 and 2, the coefficients on the indicator variable for age greater than 60 are negative and significant at the 10% level, indicating that older judges may not care as much about reversals—leading to a lower affirmance rate. In the reestimated Model 3, however, the indicator variables for age greater than 60 is negative and not significantly different from 0.

We try a measure of circuit heterogeneity based on the dispersion of GHP Scores among judges in the reviewing circuit for a particular district court judge. As our measure of dispersion we define Large GHP Dispersion as equal to 1 if the variance of circuit judge GHP scores is greater than the median and 0 otherwise. We substitute Large GHP Dispersion for the Circuit Diversity variable in Model 1 of Table 3. Unreported, the coefficient on Large GHP Dispersion is negative and significant at the 5% level, consistent with the results in Table 3 and our circuit heterogeneity hypothesis.

The presence of patent cases in our data set, which are appealed to the Federal Circuit, may introduce bias in our regression results for the circuit heterogeneity variables (defined based on the circuit judges for the circuit in which the district judge sits). To test whether the presence of patent cases may affect our results, we omit all intellectual property cases when computing the Affirmance Rate for our district judges and reestimate the models in Table 3. We obtain the same qualitative results as in Table 3 for the circuit heterogeneity variables—only Circuit Diversity is negative and significant (at the 1% level). Similar with Table 3, none of the Circuit GHP Distance variables in the models are significantly different from 0.

32. We do not report the coefficients for the Judge Controls in Table 3. None of the Judge Control coefficients were significantly different from 0.

a reversal will drive the decision making of most district court judges. Whether judges in fact view a reversal as a positive is also a testable hypothesis. If judges did view standing their ground against an ideologically opposite circuit court as a positive, we would expect to see more reversals the greater the difference between the district court judge's ideology and the ideology of the circuit court, particularly in the case of more ideologically homogeneous circuit courts.[33] As reported in Table 3, however, the Circuit GHP Distance variable that captures this difference is not significantly different from 0 in any of the models. We find no evidence that district judges with political leanings different from the average circuit court judge correlate with reduced affirmance rates.

To test whether Circuit GHP Distance affects the impact of our circuit heterogeneity variables (Circuit Diversity, Circuit Dissent, and Circuit Independence) on the Affirmance Rate, we add corresponding interaction terms to the models of Table 3. Unreported, the Circuit GHP Distance × Circuit Dissent and Circuit GHP × Circuit Independence terms in the models are insignificant. In contrast, the Circuit GHP Distance × Circuit Diversity interaction term is negative and significant at the 5% level in the reestimated Model 1. Evidence therefore exists that those district judges with political views most distinct from the average reviewing circuit court judge face the greatest decrease in the Affirmance Rate as Circuit Diversity increases.[34] Such judges are generally more likely to be reversed and the probability of reversal increases when such judges are less able to predict the preferences of the reviewing circuit court panel. These judges may hope for a "lucky draw" from a heterogeneous circuit court and publish more opinions as a result, leading to a few affirmances but a larger number of reversals. These judges are, in effect, taking on more work (they must contend with the reversals) in order to obtain ideologically satisfactory outcomes in the handful of cases that escape the notice of the appellate court.

A possible selection effect exists in our Affirmance Rate models. District judges may purposefully choose to publish only those opinions that are more likely to be affirmed by the circuit court. Where a district judge is less certain about how a circuit court will rule on a specific opinion (e.g., where the circuit judges are more heterogeneous), the district court judge will have an incentive not to publish the opinion. This will bias against finding a higher reversal rate (and toward finding a higher affirmance rate) for more heterogeneous circuits.

33. For example, a Democrat district court judge who wishes to benefit reputationally from a principled decision that is reversed will be more likely to obtain such a reversal when reviewed by a circuit court composed solely of Republican judges.

34. We also test whether Democrat district judges are more (or less) likely to respond to circuit court heterogeneity compared with Republican district judges. To the respective models in Table 3, we add an interaction term between Judge Democrat and Circuit Diversity, Circuit Dissent, and Circuit Independence. In the models, none of the interaction terms are significantly different from 0. Moreover, the sums of Judge Democrat + Judge Democrat × Circuit Diversity, Judge Democrat × Judge Democrat × Circuit Dissent, and Judge Democrat + Judge Democrat × Circuit Independence are not significantly different from 0, indicating there are no differences in the response between Democrats and Republican district judges to circuit heterogeneity in the Affirmance Rate models.

This selection effect thus biases against finding significant negative coefficients in the models of Table 3 for our circuit heterogeneity variables, suggesting that our significant results are reliable.[35]

Another selection effect issue exists—whether the affirmance rate reflects the choices of litigants, who choose whether to appeal, not appeal, or settle. Litigants may appeal more frequently from trial outcomes in diverse, unpredictable circuits, than in uniform, predictable circuits, because uncertainty interferes with settlement. The greater number of appeals will lead to more reversals (assuming not all appeals are affirmed). Because we define the affirmance rate as the number of published opinions that were not reversed divided by the total number of published opinions, the larger number of reversals will bias the affirmance rate downward in more heterogeneous circuits.

We address this issue by looking directly at the litigants' decision to appeal. We collected data for appeals from trial court decisions. We rerun the regressions in Table 3, except substituting in separate regressions the number of Appeals Per Year and the number of appeals per year divided by the average number of filings per judge in that judge's district (the Appeals Rate) as the dependent variables. Unreported, in the model with number of Appeals Per Year as the dependent variable, we find that all of our circuit heterogeneity variables are positive, and two of the three (Circuit Diversity and Circuit Dissent) are significant at the 1% level (the third, Circuit Independence, is not significant): Litigants appeal more often in diverse circuits than in uniform circuits. These results confirm our reasoning above—that greater uncertainty leads to more appeals. In the model with the Appeals Rate as the dependent variable, the coefficient on Circuit Independence is negative and significant at the 1% level while the coefficients on Circuit Diversity and Circuit Dissent are not significantly different from 0. These results contradict our reasoning. Thus, the evidence is mixed as to whether litigants choose to bring more appeals in heterogeneous circuits.

To control for the possibility of district judge publication and litigant selection effects, we calculated the average affirmances per appeal for the 2001 to 2002 period for each of our district judges based on all appealed cases, including both published and unpublished decisions (termed "Affirmances Per Appeal"). We then reestimated the models of Table 3 using Affirmances Per Appeal as the new dependent variable. Unreported, we find similar results as in Table 3. The coefficient on Circuit Diversity is negative and significant at the 1% level, indicating that greater circuit heterogeneity correlates with a lower affirmance rate. Similarly, the coefficients on Circuit GHP Distance are not significantly different from 0. In contrast with the results in Table 3, the coefficients on Circuit Quality are negative and now significant at the 5% levels in two of the three models, indicating that higher-quality circuit judges may be more likely to reverse a district court opinion. We also find that

35. Because we lacked resources to collect all the unpublished opinion data, we are unable to estimate a Heckman selection model to control for selection effects related to the decision to publish an opinion.

the coefficient on Circuit Independence is positive and now significant at the 10% level, suggesting that more independent circuit judges are more likely to affirm an appealed decision, contrary to our circuit heterogeneity hypothesis.

4.3 Citations

Finally, our theory predicts that judges in diverse circuits will write higher-quality opinions than judges in uniform circuits. We measure quality by looking at the average number of positive outside-circuit citations to the opinions of a particular district court judge. We estimate the following model with robust standard errors reported as Model 1 in Table 4. The model includes the same Judge Controls as in the Publication model above. We also substitute Circuit Diversity with Circuit Dissent (Model 2) and Circuit Independence (Model 3).

$$\text{Positive Citation}_i = \alpha + \beta_{1i}\text{Circuit Quality}_i + \beta_{2i}\text{Circuit GHP Distance}_i + \beta_{3i}\text{Circuit Diversity}_i + \sum \beta_{ki}\text{Judge Controls}_{ki} + \varepsilon_i.$$

As predicted, when circuit heterogeneity increases, positive citations increase. The coefficients on Circuit Diversity, Circuit Dissent, and Circuit Independence are positive and significant at the 1% and 5% levels. District judges appear to increase the quality of their published opinions when faced with more diverse circuit courts.[36] Shifts in all three measures of diversity correlate with economically important shifts in the average number of positive citations. The mean (median) Positive Citations is 1.76 (1.34). An increase of 0.190 (one standard deviation) in the Circuit Diversity variable correlates with a shift of 0.304 in the Positive Citations dependent variable, corresponding to a 17.3% (22.7%) increase relative to the mean (median) Positive Citations. An increase of 0.067 (one standard deviation) in the Circuit Dissent variable correlates with a shift of 0.304 in the Positive Citations dependent variable, corresponding to a 17.3% (22.7%) increase relative to the mean (median) Positive Citations. Lastly, an increase of 0.070 (one standard deviation) in the Circuit Independence variable correlates with a shift of 0.185 in the Positive Citations dependent variable, corresponding to a 10.5% (13.8%) increase relative to the mean (median) Positive Citations.[37] In

36. We do not report the coefficients for the Judge Controls in Table 4. None of the Judge Control coefficients were significantly different from 0.

37. We also used Gary King's Clarify module for Stata that applies stochastic simulation techniques to estimate the change in the average number of positive citations with all independent variables set at their mean and a one standard deviation increase in the Circuit Diversity, Circuit Dissent, and Circuit Independence variables. Using the Clarify module, we find that an increase of 0.190 (one standard deviation) in the Circuit Diversity variable correlates with a shift of 0.303 in the Positive Citations dependent variable, corresponding to a 17.2% increase relative to the mean Positive Citations. An increase of 0.067 (one standard deviation) in the Circuit Dissent variable correlates with a shift of 0.303 in the Positive Citations dependent variable, corresponding to a 17.2% increase relative to the mean Positive Citations. An increase of 0.070 (one standard deviation) in the Circuit Independence variable correlates with a shift of 0.184 in the Positive Citations dependent variable, corresponding to a 10.5% increase relative to the mean Positive Citations. Information on the Clarify Stata module is available at http://gking.harvard.edu/clarify/docs/clarify.html.

Table 3. Affirmance Rate

	Model 1	Model 2	Model 3
Circuit Quality	0.00136 (0.00398)	0.00260 (0.00384)	−0.000850 (0.00526)
Circuit GHP Distance	−0.0842 (0.0566)	−0.0861 (0.0567)	−0.0872 (0.0571)
Circuit Diversity	−0.104*** (0.0298)		
Circuit Dissent		−0.105 (0.0745)	
Circuit Independence			0.149 (0.103)
Constant	1.009*** (0.0449)	0.945*** (0.0407)	0.962*** (0.0449)
Judge Controls	Yes	Yes	Yes
N	606	606	606
R^2	0.039	0.017	0.020

Robust standard errors in parentheses; $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Dependent variable is the Affirmance Rate. Judge Controls include Female, Black, Other Race, Judge Experience Prior Judge Prior Prosecutor, Prior Private, Chief Judge, Top School, Judge Democrat, and Salient.

contrast, none of the coefficients on the Circuit GHP Distance variables are significant in the models, indicating that the difference in political leanings is not an important explanatory variable for opinion quality.

To test whether Circuit GHP Distance may affect the impact of our circuit heterogeneity variables (Circuit Diversity, Circuit Dissent, and Circuit Independence) on the average number of positive citations per opinion, we add corresponding interaction terms to the models of Table 4 (e.g., Circuit GHP Distance × Circuit Diversity to Model 1). Unreported, the Circuit GHP Distance × Circuit Diversity and Circuit GHP × Circuit Dissent terms in the models are insignificant. In contrast, the Circuit GHP Distance × Circuit Independence interaction term is positive and significant at the 1% level in the reestimated Model 3 of Table 4. Evidence therefore exists that those district judges with political views most distinct from the average reviewing circuit court judge tend to write opinions that receive a greater number of positive citations as Circuit Independence increases.[38] This suggests that district judges

38. We also test whether Democrat district judges are more (or less) likely to respond to circuit court heterogeneity compared with Republican district judges. To the respective models in Table 4, we add an interaction term between Judge Democrat and Circuit Diversity, Circuit Dissent, and Circuit Independence. In the models, the coefficients on the Judge Democrat × Circuit Diversity and Judge Democrat × Circuit Dissent are not significantly different from zero. Moreover, the sums of Judge Democrat + Judge Democrat × Circuit Diversity and Judge Democrat + Judge Democrat × Circuit Dissent are not significantly different from 0, indicating there are no differences in the response between Democrats and Republican district judges to these types of circuit heterogeneity in the Positive Citations models. In contrast, the coefficient on Judge Democrat × Circuit Independence is positive and significant at the 5% level and the sum of Judge Democrat + Judge Democrat × Circuit Independence is positive and significant at the 10% level, indicating that Democrat district judges may be more likely compared with Republican district judges to respond to circuit heterogeneity, as indicated by greater independence among the circuit judges, through higher-quality opinions.

Table 4. Positive Citations

	Model 1	Model 2	Model 3
Circuit Quality	−0.0280 (0.0627)	−0.0349 (0.0620)	−0.123 (0.0788)
Circuit GHP Distance	−0.108 (1.015)	−0.0558 (1.014)	−0.127 (1.019)
Circuit Diversity	1.598*** (0.407)		
Circuit Dissent		4.553*** (1.539)	
Circuit Independence			2.643** (1.024)
Constant	0.912 (0.689)	1.470** (0.670)	2.666*** (0.803)
Judge Controls	Yes	Yes	Yes
N	606	606	606
R^2	0.033	0.033	0.017

Robust standard errors in parentheses; $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Dependent variable is the Positive Citation Rate. Judge Controls include Female, Black, Other Race, Judge Experience Prior Judge Prior Prosecutor, Prior Private, Chief Judge, Top School, Judge Democrat, and Salient.

with political beliefs different from those of the circuit court may write better opinions when the circuit court is more independent—perhaps because they believe that independent judges are less likely to overrule high-quality opinions for political reasons.

To check robustness, we examine the relationship of circuit heterogeneity and the average net positive citations and secondary source citations to a particular district court judge's opinions as alternate measures of district judge opinion quality. We thus ran six regressions—with the two new dependent variables, and the three alternative measures of heterogeneity. In five of the six regressions (unreported), we obtained the same results at the 1% level. In one of the six regressions, the coefficient was significant at the 5% level. In all six regressions, the coefficients on the Circuit GHP Distance variables are not significantly different from 0.

Lastly, we reestimate Models 1 through 3 of Table 4 using the average number of pages per opinion for a district court judge. Average number of pages may be a rough proxy for quality or effort. In the models, the coefficient on Circuit Diversity and Circuit Dissent are positive and significant at the 1% and 5% levels, respectively, whereas the coefficient on Circuit Independence is not significantly different from 0 (unreported). Some evidence exists, therefore, that district court judges respond to a more diverse circuit

court review with not only higher quality but also longer opinions.[39] In contrast, none of the coefficients on the Circuit GHP Distance variables are significant in the models.

This result can be given two interpretations. First, length is a proxy for quality and comprehensiveness. Second, greater length results because of greater focus on the facts. District judges have at least some discretion to choose between deciding a case on the basis of facts or on law. Appellate review of interpretations of the facts is thought to be more deferential, leading to a higher affirmance rate. Thus, district judges in diverse circuits might write more fact-intensive and hence longer opinions in order to minimize the risk of reversal (cf. Schanzenbach and Tiller 2007).

5. Conclusion

Earlier studies suggest that federal district judges do not vote in an ideological fashion. A Democratic district judge is no more likely to vote in favor of labor rights than a Republican district judge. These results, however, do not indicate that the district judges rule in a politically neutral way. The studies of appellate judging, which do show political bias, together with the high affirmance rate, provide an explanation: District judges, whatever their political orientation, decide cases in a politically biased way, albeit reflecting the political biases of the appellate judges rather than those of the district judges themselves. We provide empirical evidence in support of this explanation.

39. As another robustness test, we clustered errors by district in the regressions in Table 4 and found similar qualitative results. Circuit Diversity and Circuit Dissent are positive and significant at the 1% level; Circuit Independence is positive and significant at the 5% level.

To test the importance of district judge age, we include an indicator variable in the models in Table 4 equal to 1 if the judge is older than 60 years in 2000 and 0 otherwise. Unreported, we obtain similar qualitative results as in Table 4; none of the coefficients on the indicator variable for age greater than 60 are significantly different from 0.

We try a measure of circuit heterogeneity based on the dispersion of GHP Scores among judges in the reviewing circuit for a particular district court judge. As our measure of dispersion we define Large GHP Dispersion as equal to 1 if the variance of circuit judge GHP scores is greater than the median and 0 otherwise. We substitute Large GHP Dispersion for the Circuit Diversity variable in Model 1 of Table 4. Unreported, the coefficient on Large GHP Dispersion is not significantly different from 0. This result is inconsistent with our finding that greater circuit heterogeneity is positively correlated with Positive Citations. It is possible that district court judges focus more on the specific party affiliations of the circuit court judges (a more visible measure of ideological affiliation than the GHP score) in determining the unpredictability of the circuit court in making their determination on how much effort to put into writing published opinions, determining the quality of the opinions.

The presence of patent cases in our data set, which are appealed to the Federal Circuit, may introduce bias in our regression results for the circuit heterogeneity variables (defined based on the circuit judges for the circuit in which the district judge sits). To test whether the presence of patent cases may affect our results, we omit all intellectual property cases when computing the Positive Citations for our district judges and reestimate the models in Table 4. We obtain the same qualitative results as in Table 4.

Given that they are supervised in this way by appellate judges, district judges exercise their discretion in other ways. Anecdotal evidence suggests that they care a great deal about case management: They try to decide cases quickly so that they do not fall behind. Perhaps, they also care about their reputation for competence or entertain hopes for promotion. Whatever the case, there is no point in deciding a case to advance one's ideological preferences if it will simply be reversed, creating extra work.

The likelihood that a decision will be affirmed depends, in part, on the predictability of the circuit court. When the circuit court is politically uniform, its ideology is predictable and hence all decisions are easier. When the circuit court is diverse, the ideology of the reviewing court depends on random selection of the panel, and thus all decisions are harder in the sense that it is harder to predict how the reviewing court will react to them.

This phenomenon has three effects. First, district judges in diverse circuits publish fewer opinions as a proportion of their caseload. They prefer a lower publication rate with a lower reversal rate to a higher publication rate with numerous reversals. A lower publication rate results from district judges choosing not to publish opinions that are more likely to get reversed. Second, district judges in diverse circuits expend more effort on those opinions that they do publish. That is why their published opinions are longer, and why they end up being more helpful for out-of-circuit judges, who cite them more frequently. Third, despite this extra effort, the affirmance rate is no higher than the rate in uniform circuits. The extra effort only enables district judges to (not quite) keep up with their luckier brethren in the more uniform circuits.

We also find some, but weak, evidence that district court judges will try to decide cases so as to advance their political agenda, even though they take the risk that they will be reversed. When the appellate court is ideologically distant, district courts publish less, perhaps hoping that the appellate court will give less scrutiny to unpublished opinions. When the appellate court is ideologically distant but sufficiently diverse, district courts will sometimes write better opinions or opinions more likely to be reversed, perhaps because they think that they may get a lucky draw with respect to the appellate panel.

Our empirical results are subject to a number of limitations, which suggest avenues for future research. First, given data limitations, we have conducted a cross-sectional analysis; our hypothesis could also be tested using a longitudinal data set. As circuit judges retire and are replaced, the degree of circuit heterogeneity should change, resulting in changes in the behavior of district judges. Second, as we have acknowledged, some of our measures are noisy. Improved measures for appeal rates, for example, that were able to exclude the more frivolous appeals, would allow us to test our hypotheses more rigorously. Third, it would be interesting to see if district judges behave differently in periods when promotion was more likely as a function of the preferences of the relevant politicians. Such a study could exploit the fact that only certain district judges have a substantial chance of promotion (e.g., younger judges, judges who belong to the party of the president). Fourth, it would be interesting

to build on Tiller and Spiller's (1999) argument that district judges advance their ideological preferences while shielding themselves from reversal by manipulating interpretations of fact. Fifth, we build our model of district court judge behavior on an admittedly sparse foundation. In contrast to the large body of writing on the determinants of Supreme Court justice behavior, in the form of biographies, essays by former law clerks reporting anecdotes, interviews in the press, speeches, and so on, there is little on the factors that determine the choices that district judges make.

Our conclusions also have normative implications in light of recent work that emphasizes the value of political diversity in the circuit courts (Revesz 1997; Cross and Tiller 1998; Miles and Sunstein 2006). This work finds that judges on appellate panels often "polarize." When three Republicans sit together, or three Democrats sit together, their decisions are more likely to run in the politically predictable direction than when the panel is diverse. Republican judges are more likely to vote in favor of employers, for example, while Democratic judges are more likely to vote in favor of workers. Various explanations have been proposed. Appellate judges prefer to vote in a way that advances their ideological preferences. When the panel is politically uniform, the judges polarize by talking themselves into a more extreme outcome. When the panel is politically diverse, the minority judge acts as a whistleblower who can reveal the weakness of the majority's reasoning in a dissent. At the same time, the minority judge prefers not to expend the effort writing a separate opinion. The majority judges and the minority judge reach a bargain in which the majority accepts a less extreme outcome in return for the minority judge's joining the opinion.

Some commentators have argued that these empirical results suggest that society does better when the circuit courts are politically diverse than when they are politically uniform. Diverse courts will have fewer uniform panels, with the result that polarization will be less often to occur, which, at a minimum, reduces the variance in judicial outcomes. We would add to this observation a further point that when appellate courts are ideologically diverse, district judges have stronger incentives to put effort into their published opinions. The judges cannot assume that their decisions will be affirmed because of their ideological direction. Higher-quality opinions by district judges are a good thing. But they are not costless. Judges who put more effort into writing published opinions may put less effort into case management and writing unpublished opinions, and so the overall effect on social welfare is ambiguous.

If one thinks that, on balance, district judges should devote more effort on published opinions, even if this means that they put less effort into case management, then one can improve judges' incentives by increasing the political diversity of appellate courts. For example, one might enable appellate judges to sit on panels outside their circuits—for example, a Second Circuit judge might on occasion sit on Ninth Circuit panels.

Appendix

Table A1. Variable Definitions and Summary Statistics

Variable	Definition	Source	Obs.	Min.	Max.	Mean
Female	Female judge	Kuersten (2009)[40]	629	0.00	1.00	0.22
Black	Black judge	Kuersten (2009)	629	0.00	1.00	0.11
Other Race	Judge of other race	Kuersten (2009)	629	0.00	1.00	0.05
Judge Exp.	Number of years on bench	Westlaw judicial biographies	629	0.00	36.00	10.74
Prior Judge	Was a judge prior to appointment	Federal Judicial Center, www.fjc.gov	629	0.00	1.00	0.42
Prior Pros.	Was a prosecutor prior to appointment	Federal Judicial Center, www.fjc.gov	629	0.00	1.00	0.09
Prior Priv.	Was private attorney prior to appointment	Federal Judicial Center, www.fjc.gov	629	0.00	1.00	0.42
Chief Judge	Was chief judge for 2001, 2002, or both	Westlaw judicial biographies	629	0.00	1.00	0.18
Top School	Graduated from Harvard, Yale, or Stanford	Westlaw judicial biographies	629	0.00	1.00	0.14
Judge Democrat	Judge was appointed by Democratic president	Westlaw judicial biographies	629	0.00	1.00	0.52
Salient	Fraction of cases involving church and state, campaign finance, federalism, first amendment, and other constitutional rights	Westlaw district court cases	606	0.00	1.00	0.13
Circuit Quality	Out-of-circuit citations to majority opinions of appellate judges in circuit	Choi and Gulati (2004)	629	3.05	7.27	5.29

Continued

40. We use the judge background data set (often called the Auburn data set).

Table a1. *Continued*

Variable	Definition	Source	Obs.	Min.	Max.	Mean
Circuit GHP Distance	Distance between the district court judge's political ideology and the average (Giles et al. 2001) score for the circuit court judges	Giles et al. (2001) and Westlaw judicial biographies	629	0.36	0.64	0.49
Circuit Diversity	Equality of Republican and Democratic appellate judges in circuit	Choi and Gulati (2004)	629	0.40	1.00	0.70
Circuit Dissent	Ratio of dissents to majority appellate opinions in circuit	Choi and Gulati (2004)	629	0.03	0.26	0.14
Circuit Indep.	See text, supra	Choi and Gulati (2004)	629	−0.21	0.09	−0.06
Publications Per Case	Published opinions divided by total filings	Westlaw district court cases; AOUSC	556	0.00	0.34	0.02
Positive citations	Out-of-circuit citations to published opinions	Westlaw district court cases	606	0.00	23.47	1.76
Affirmance rate	Number of affirmances[41] of published opinions divided by number of published opinions	Westlaw district court cases	606	0.00	1.00	0.91
Pages	Number of pages per opinion	Westlaw district court cases	606	2.67	40.00	11.31

41. More precisely, nonoverruled opinions which includes nonappealed opinions.

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