
Speaking Up: A Model of Judicial Dissent and Discretionary Review

Andrew F. Daughety and Jennifer F. Reinganum*

We employ information economics to model the decision by a dissenting appeals court judge to strategically (but truthfully) promote cases as worthy of reconsideration by a higher court, and discretionary decisions by justices on that supreme court to choose whether to formally review the case. In our model, judges and justices receive utility both from the outcome of the case in question and from the breadth of application of the outcome to jurisdictions besides the original source of the case (that is, the precedential value of the case). Discretionary decisions incur opportunity costs, borne both by judges and justices, that reflect foregone chances to promote and review (respectively) other cases through which they could also influence the evolution of the law.

One very plausible equilibrium in our model predicts that an appeals court judge will find it valuable to communicate information to like-minded supreme court justices. However, a more unexpected type of equilibrium can exist that can best be summarized as an equilibrium with “strange bedfellows:” a judge with a particular jurisprudential orientation may

* Andrew F. Daughety, Professor of Economics and Professor of Law, Vanderbilt University, andrew.f.daughety@vanderbilt.edu. Jennifer F. Reinganum, Bronson Ingram Professor of Economics and Professor of Law, Vanderbilt University, jennifer.f.reinganum@vanderbilt.edu. We thank the Law and Business Program at Vanderbilt University and NSF Grant SES-0239908 for financial support. We especially thank the referees, Lucian Bebchuk, John Conley, Barry Friedman, Louis Kaplow, Nancy King, Richard Posner, Robert Rasmussen, Suzanna Sherry, Kathryn Spier and Christopher Yoo, as well as conference participants at the American Law and Economics Association, Toronto, 2003, and seminar participants at Harvard University and Vanderbilt University for helpful comments and suggestions on earlier drafts.

© 2006 by the University of Chicago. All rights reserved. 0-226-64596-7/2006/0014-0001\$10.00

2 Speaking Up: A Model of Judicial Dissent and Discretionary Review

choose to communicate and influence a justice (or justices) with different jurisprudential views in order to persuade the justice(s) to vote to review the case in question. In the first type of equilibrium we find communication by dissenters which primarily suggests a high likelihood that the supreme court will overturn the appeals court's decision (the case is likely to be a "good bet" for reversal), while the second type of equilibrium primarily involves communication by a minority judge suggesting that the supreme court's decision is likely to be a "close call," but that the case is deserving of reconsideration at the highest level.

We show that by setting a high hurdle for discretionary review (e.g., by restricting access), the supreme court justices can capitalize on the desire of appeals court judges to influence law, thereby encouraging enhanced informational effort by the appeals court judges: judges act as screeners of the cases most likely to be of interest to justices. Furthermore, we show that, given the opportunity costs in the system, the set of promoted cases is larger when jurisprudential preferences are more majoritarian.

I. INTRODUCTION

We consider discretionary actions by agents in a weak hierarchical system, wherein decision-makers at a higher level need information from those at a lower level, but cannot directly reward or discipline those lower-level agents. Examples of such organizations are systems of courts and advisory committees to larger bodies (such as congressional committees, faculty appointment committees, and planning committees for large public projects). In particular, we develop a model in which judicial dissent at the appeals court level communicates information to justices on a supreme court that a case is worthy of reconsideration, either to correct a putative error or to establish a broader precedent. We use this model to characterize when judges will strategically promote a case for higher level review and how changes in justices' jurisprudential preferences affect such information transfer.

We view judges and justices as (individually) motivated to influence the development of law as they (individually) regard to be correct; the salient attribute of a judge's dissenting opinion is the communication of important, otherwise currently unobservable, information about a case that might help a higher court justice pursue her own concept of how the law should evolve. In equilibrium, review is (at least partially) contingent upon judicial dissent, allowing the supreme court to capitalize on the desire of appeals court judges to influence the law,

thereby encouraging enhanced information revelation by appeals court judges.

Dissent. Dissent in a judicial system can be viewed as taking different forms. For example, when an appeals court in the federal system takes an appeal of a case previously decided by a trial court (a federal district court), the review is typically heard by three judges randomly drawn from the pool of appeals court judges. Since majority rule is used to decide a case, sometimes a judge differs with the majority and writes a discussion (a minority opinion) of his reasons for dissent. Such minority judges could choose to provide a response that is just sufficient to satisfy the legal and cultural expectations associated with a dissenting vote, but they also might write so as to encourage a higher court to review the case and overturn the majority decision; that is, they may seek to promote a case to the upper court's docket for review and, presumably, reversal.¹ They may wish to obtain a reversal limited to their own jurisdiction (perhaps they feel that the majority on the appeals court is in conflict with the rest of the system), or they may want to see both a reversal and the application of the resulting precedent to other jurisdictions.²

A second form of dissent occurs when a majority on an appeals court panel adheres to a precedent, but indicates that it thinks the ruling precedent is wrong and should be changed. In this case, the majority is dissenting from established law but enforcing it nonetheless; it does this to encourage a higher authority to overrule it, thereby changing the law. An example of this form of dissent is Chief Judge Richard Posner's majority opinion in *Khan v. State Oil Company*, 93 F3d 1358 (1996), wherein the majority followed standard procedure and applied existing precedent developed by the Supreme Court, but argued that the precedent was wrong, that it should be changed, and invited further appeal (i.e., to the U.S. Supreme Court) to make this so.³ A third form of dissent can arise when there is inter-circuit con-

¹ For a current example, Judge Alex Kozinski's dissents on the U.S. Ninth Circuit Court of Appeals have been characterized by some of his colleagues as having exactly this purpose, and being rather successful at it; see Paul Elias, *Nine Opinions—But Still in Jail*, *The Recorder/Cal Law* [Jan 27, 2000].

² There are a number of papers on what motivates judges and justices. For a discussion of the objective function for a judge or a justice, see Richard A. Posner, *What Do Judges and Justices Maximize? (The Same Thing Everybody Else Does)*, 3 S Ct Econ Rev 1 (1993).

³ This is a maximum resale-price-maintenance case which, under a 1968 Supreme Court case, *Albrecht v Herald*, 390 US 145 (1968), was a *per se* violation of the Sherman Act. The 7th Circuit opinion in *Khan v State Oil Co*, 93 F3d 1358 (1996) simultaneously enforced the precedent and argued that the logic supporting *Albrecht* was "unsound when decided." The Supreme Court unanimously vacated and remanded in

4 Speaking Up: A Model of Judicial Dissent and Discretionary Review

flict; that is, when different circuits decide closely-related cases differently.⁴ More broadly, an opinion by a judge (or a collection of judges) that explicitly or implicitly encourages review for the purposes of reversal by a higher court can be a form of dissent from the existing body of law.

In the formal analysis below we restrict ourselves to the first form of dissent discussed above (dissents by minority judges) and we are particularly interested in the incentives and conditions such that a dissenter elects to promote a case (reveal information) for higher review, via writing an appropriate dissenting opinion, and the higher court elects to take the case. However, it is worth noting that formal analyses of the other forms of dissent would be similar to this one. The particular information we have in mind is that the appeals court judge addresses how the case fits into, modifies or augments alternative specific bodies of law (since the facts are known and documented via the trial transcript, the facts themselves are common knowledge); this is done via writing an opinion. Published⁵ dissenting opinions appear to be divisible into two types: “reasoned” opinions, wherein the reasoning by the dissenting judge is laid out in detail, and “non-reasoned” opinions, with this meaning “an opinion that does not attempt to provide reasons for its results . . . a short paragraph that announces a conclusion but merely hints at the reasoning process behind it—and sometimes there is not even a hint.”⁶ We adopt this division and language in our analysis and assume that dissents written to promote higher review (which we refer to as reasoned) are significantly different in nature from those that are non-reasoned in character (and not promotional in nature). Thus, we are particularly interested in the incremental information release associated with a

State Oil Co v Khan, 522 US 3 (1997), overruling *Albrecht* and requiring use by all courts of a rule-of-reason (i.e., did a defendant’s conduct actually reduce competition?) when evaluating vertical maximum price fixing, the desired outcome argued by the 7th Circuit opinion.

⁴ Inter-circuit conflict is listed first, as a consideration for granting review of a case, under Rule 10 of “Rules of the Supreme Court of the United States,” which govern procedure at the U.S. Supreme Court. See Lee Epstein, et al, *The Supreme Court Compendium* 59 (Cong Q 2d ed, 1996).

⁵ Published opinions are those deemed by the appeals court in question to be citable as precedent in future cases in the circuit (jurisdiction) in question; most circuits do not consider precedential those opinions that have been designated as “unpublished.” Liptak indicates that, for FY2001, approximately 80% of all federal appeals courts opinions were unpublished. Adam Liptak, *Federal Appeals Court Decisions May Go Public*, NY Times A13 (Dec 25, 2002). Moreover, dissent in these decisions is apparently very rare. Donald R. Songer, *Criteria for Publication of Opinions in the U.S. Court of Appeals: Formal Rules Versus Empirical Reality*, 73(6) *Judicature* 307 (1990).

⁶ Richard A. Posner, *The Federal Courts: Challenge and Reform* 174 (Harvard, 1996).

reasoned dissent, one aimed at influencing at least some of the justices in the hierarchy above the dissenter.

Of course, the Supreme Court is not only influenced to take a case based on a dissent from the lower court.⁷ We consider the technical analysis of others' submissions, such as those by counsel for the parties themselves and interested third parties (all of which occur after the publication of the minority judge's dissent, and therefore may be viewed—at least partly—as derivative), to be similar to that which we provide below for the influence of the dissenting opinion itself. We further recognize that dissents written by an appeals court judge may also serve to influence courts in other circuits as well as judges in the circuit but not on the instant panel, but it does seem that a well-reasoned dissent addresses all the possible audiences simultaneously. We abstract from these other sources and audiences in the analysis and focus on the minority judge's choice to report important information to the justices on a supreme court.

Results. Our model generates a number of results. First, we find that sufficient restriction of access to a supreme court can yield increased information revelation about an appealed case, though excessive restriction can suppress information revelation. The basic intuition is straightforward: if all cases appealed to a supreme court will be reviewed, there is little incentive for a dissenting judge at an appeals court to spend much effort on communicating information, and the same is true if there is no chance for review.⁸ We investigate how various parameters influence the incentives to communicate information from a lower to a higher level, and why communicating may be productive from the dissenting judge's perspective. Particularly relevant parameters include the opportunity costs, borne both by judges and justices that reflect foregone chances to promote and review (respectively) other cases through which they could also influence the evolution of the law.

Second, we find conditions under which an appeals court judge communicates information to like-minded supreme court justices: a minority judge chooses to promote a case for review when his private

⁷ The notion that Supreme Court justices rely upon "cues" to guide their discretionary decision-making is an old one in the political science literature. Joseph Tanenhaus, et al, *The Supreme Court's Certiorari Jurisdiction: Cue Theory*, in Glendon Schubert, ed, *Judicial Decision Making* 111-132 (Free Press, 1963). Also, several authors review some of the empirical findings on what cues the Supreme Court seems to use. Lee Epstein and Jack Knight, *The Choices Justices Make* (Cong Q, 1998); H.W. Perry, *Deciding to Decide* (Harvard, 1991).

⁸ This suggests that the actual arguments a judge might make may not have much influence on the final disposition of a case that is heard at the supreme court; we return to this in Section III.

information suggests a high likelihood of reversal by the supreme court, thereby acting as a screener of cases for these justices. In this equilibrium, judges' dissents report "good bets" for reversal. Moreover, we show that a higher opportunity cost on the part of the justices generally implies a higher equilibrium threshold for a minority judge to write a reasoned opinion.

Third, a more unexpected type of equilibrium can exist that can best be summarized as an equilibrium with "strange bedfellows:" a judge with a particular jurisprudential orientation may choose to communicate and influence a justice with different jurisprudential views in order to persuade the justice to vote to review the case in question. This convergence of seemingly-opposed interests on the part of agents at different levels of the hierarchy is not a reflection of different priors over the ultimate outcome or errors in probabilistic assessments, but instead arises because their largely-opposed interests can still generate a region of agreement. In this case, judges choose to promote a case wherein the law does not unambiguously support either litigant, so the case is likely to be a "close call," but worthy of such review nonetheless.

We refer to both of the above equilibria as "push" equilibria, inasmuch as the decision to grant a review at the supreme court will require a judge to write a reasoned opinion (to "push" the case for review) revealing information about the legal issues in the case that the supreme court is likely to discover if the case is heard there. An alternative type of equilibrium is a "pull" equilibrium, wherein a reasoned dissent is not necessary for the higher court to choose to grant review. We characterize such equilibria and note that pull equilibria can reflect conditions wherein, for example, justices would choose to vote for review because generating a uniform precedent is more important to them than whether or not they are in the winning coalition on the issue. Thus, some behavior that would appear to be non-strategic is encompassed by our model.

Finally, we examine the effect of changes in the model parameters on the equilibria. In particular, two are of special note. First, we focus on how increases in the opportunity costs borne by justices feed back to influence the reporting of good bets and close calls. Second, we examine how changes in parameters reflecting jurisprudential considerations affect such reporting. In particular, we show that shifts of preferences in a majoritarian direction increase the likelihood of information-revealing dissents.

Plan of the Paper. Section II provides a brief discussion of institutional background and a review of related literature. Section III presents the elements of the model and the payoff functions for the

justices on the supreme court as well as the dissenting judge on the appeals court. Section IV characterizes the two types of pure-strategy equilibria in the model, while Section V discusses the effects of changes in parameters on the incentives for dissenting judges to promote cases for review. Section VI provides a summary of results and suggests potential extensions. A “Web Appendix” provides additional results, proofs, and supplementary material.⁹

II. BACKGROUND, ASSOCIATED ISSUES AND RELEVANT LITERATURE

Most state and federal court systems in the U.S. are organized into three tiers. There is a lowest level of trial courts, where evidence is considered, facts are established, law is applied and decisions are made about who wins and who loses. Above that level are appeals courts, where issues of the appropriate interpretation of law in trial courts can be reviewed. Such courts usually have little or no discretionary power to decide whether a case that has been brought by a party will be reviewed, at least insofar as an initial review of a trial court’s decision is concerned (generally, one review is a matter of right).

The exercise of discretion (choosing whether to review a case) is more typical of a “supreme” court. Especially in the federal system, the granting of a petition to the Supreme Court for a writ of certiorari (i.e., “granting cert”) is rare, and has been declining steadily since the early 1970’s.¹⁰ This reduction may have reflected many professional and personal reasons, but it does seem reasonable that the “cert budget” (a term we use to refer to the approximate number of cases that the Court will choose to hear in a year) is a decision variable, determined by some joint decision of the members of the Court. We do not intend to model the determination of the size of the cert budget itself in this paper, though we will manipulate the opportunity cost of hearing a case to simulate the effects of changes in the cert budget on the incentives for information transmission from a lower court judge; we presume that a higher opportunity cost of hearing a case re-

⁹ Andrew F. Daughety and Jennifer F. Reinganum, *Web Appendix*, Vanderbilt University, online at <http://www.vanderbilt.edu/Econ/faculty/Daughety/SpeakingUpWebAppendix.pdf>.

¹⁰ In particular, the average yearly number of docketed cases granted cert was 225 in the 1970’s, 155 in the 1980’s, and 92 in the first half of the 1990’s; these totals, respectively, represent 9.9%, 5.9% and 3.8% of the average number of docketed petitions for cert. Epstein, et al, *The Supreme Court Compendium* (cited in note 4) These numbers and percents exclude *in forma pauperis* applications (i.e., those who wish to be exempted from paying court costs), the volume of which has gone up significantly over time, but the number of which that are actually granted cert is quite small.

flects a tighter budget and a greater willingness to forego hearing some important cases.

Perry, using a sample of cases appealed to the U.S. Supreme Court in 1976-1980, finds that cases involving a split (as compared with a unanimous vote) at a federal appeals court are twice as likely to be granted review.¹¹ Caldeira, Wright and Zorn find that appeals court dissents are statistically significant in influencing the granting of U.S. Supreme Court review.¹² However, many of the same factors that encourage dissents are also likely to encourage grants of cert: cases that are difficult and/or deal with important issues are likely to result in mixed appeals court decisions (and, possibly, conflicts across circuits) and may readily justify Supreme Court review. Our model takes reasoned dissents and grants of cert to be co-determined and we indicate why such empirical analyses are likely to find that the presence of a dissent will be a noisy predictor of a grant of cert.

In the law and economics literature, models of appeal have typically taken an "error-correction" approach, though in some cases review is taken to be discretionary. For instance, Shavell and Daughety and Reinganum assume that the role of an appeals court is to correct lower court errors, where these errors are signaled by a litigant's decision to appeal.¹³ In Shavell's model, the error is of the misclassification sort, while in Daughety and Reinganum's model, an appeals court determines error based on private information regarding what (it expects) the supreme court would do.¹⁴ Articles by Cameron, Segal and Sonder, as well as Spitzer and Talley consider discretionary review by a higher court for the purpose of "ideological auditing."¹⁵ That is, the ideological preferences of the lower and higher court are

¹¹ H.W. Perry, *Deciding to Decide* 136, Table 5.1 (Harvard, 1991).

¹² Gregory A. Caldeira, John R. Wright and Christopher J.W. Zorn, *Strategic Voting and Gatekeeping in the Supreme Court* 15 (3) J L, Econ, & Org 549 (1999).

¹³ Steven Shavell, *The Appeals Process as a Means of Error Correction*, 24(2) J Legal Stud 379 (1995); Andrew F. Daughety and Jennifer F. Reinganum, *Appealing Judgments*, 31(3) Rand J Econ 502 (2000).

¹⁴ Recently, Cameron and Kornhauser have extended Shavell's analysis to allow for hidden information about whether a defendant is liable or not liable, which thereby influences both error correction and error introduction. Charles M. Cameron and Lewis A. Kornhauser. *Appeals Mechanisms, Litigant Selection, and the Structure of Judicial Hierarchies*, in Jon Bond, Roy Flemming and James Rogers, eds, *Institutional Games and the Supreme Court* (Virginia, forthcoming). These authors find that (assuming the defendant's culpability becomes common knowledge to both litigants at the end of the first stage), there are only two further tiers of the hierarchy needed to achieve a zero error rate in equilibrium.

¹⁵ Charles M. Cameron, Jeffrey A. Segal, and Donald Songer, *Strategic Auditing in a Political Hierarchy: An Informational Model of the Supreme Court's Certiorari Decisions*, 94(1) Am Polit Sci Rev 158 (1999); Matt Spitzer and Eric Talley, *Judicial Auditing*, 29(2) J Legal Stud 649 (2000).

known to differ. A lower court decision, which involves private information about the case, might not conform to the higher court's preferred decision were it also to observe the information; this is a source of error from the perspective of the higher court. Asymmetric information means that the lower court might indulge its ideological preferences; anticipating this, the higher court will "audit" the lower court's decisions, choosing some cases to review: the higher court will review the case, discover the lower court's private information and impose its preferred outcome.

None of these models addresses the issue of making law by broadening precedent (in addition to error correction), the potential for information provision through dissenting opinions (as opposed to simple votes), or that each court involves multiple actors with various (and sometimes conflicting) preferences.¹⁶ These attributes are incorporated in the model we develop below, with novel results. For example, the equilibrium involving "strange bedfellows" (wherein close calls are pushed for review) would never arise if the supreme court justices were motivated only by error correction. This equilibrium stems directly from the presence of justices who anticipate extending an appeals court ruling (with which they expect to agree) to other jurisdictions. Moreover, we show how conflicts in perspectives on the supreme court, uncertainty on the part of appeals court judges about supreme court opportunity costs, and the intensity of preference for certain types of cases (referred to earlier as conditions for "pull equilibria") all can lead to noisy data that undermine the empirical analysis of what factors influence grants of cert.

III. MODEL SET-UP AND PAYOFF FUNCTIONS FOR SUPREME COURT JUSTICES AND FOR JUDGE m

A case is a combination of facts and law. The facts for a specific case are determined by the trial court. Note that all courts have access to the trial transcript, and thus to the facts of the case, so the facts are common knowledge. However, as the case is considered by alterna-

¹⁶ Cross and Tiller focus on error correction but allow various and conflicting preferences. They argue that the presence of a potential dissenter on an appeals court panel (whose ideology differs from his colleagues' but agrees with that of the majority on the supreme court) can induce the appeals court majority to conform with supreme court precedent in cases where it would otherwise disregard it. They find that their hypothesis is supported by evidence from a study of appeals court opinions for the DC Circuit citing a particular U.S. Supreme Court precedent. Frank B. Cross and Emerson H. Tiller, *Judicial Partisanship and Obedience to Legal Doctrine: Whistleblowing on the Federal Courts of Appeals*, 107 Yale L J 2155 (1998).

tive judges and justices, individual observations on the relevant law may differ. This is for two reasons: heterogeneity in expertise and in jurisprudential perspective. First, appeals courts judges bring considerable expertise about the law to bear on the question “Was the law properly interpreted by the trial court below?” but this human capital is likely to differ from one judge to another. Judges differ significantly in preparation for the bench. For example, 40% of federal circuit judges in 1994 previously held positions as federal district court judges,¹⁷ while a number of circuit judges have come from law schools.¹⁸ Moreover, they have different areas of expertise, e.g., securities versus labor versus civil rights law. This background and depth is a reason for a higher level court to desire information from the lower court: the appeals court judges’ expertise in matters of how the case at hand relates to existing law and other sources of intellectual guidance (for example, concepts and research results from non-judicial legal and non-legal thinkers).

If human capital were the only source of differences among the judges, then even if they were to receive different insights, as good Bayesians they would update their assessments and agree on the resulting point of law. However, judges also hold different jurisprudential perspectives about what outcome should prevail, which means that differences about what are the most salient legal characteristics of the case at hand may persist.¹⁹

We denote an observation of the relevant law by z , and we treat z as a random variable drawn from a given distribution²⁰ where, for convenience, we assume that $0 \leq z \leq 1$. Moreover, assume that low values of z are consistent with interpretations of the law that support one of the litigants in the appeal, while high values of z are consistent with interpretations of the law that would support the other litigant. For the purposes of the present analysis, assume that low values of z are consistent with interpretations of the law that support the Respondent (R) in the appeal, while high values of z are consistent with interpretations of the law that would support the Petitioner (P). For example, consider a suit by an individual against a state, which has been appealed to an appeals court (AC) which has found for the state. Then by appealing to the Supreme Court, the individual becomes P and the

¹⁷ Posner, *The Federal Courts* 350 (cited in note 6).

¹⁸ Tracey E. George, *Court Fixing*, 43(1) *Ariz L Rev* 9 (2001).

¹⁹ For a discussion of the analysis of various characteristics (age, sex, race, party, etc.) of circuit judges on voting behavior, see George, 43(1) *Ariz L Rev* 9 (cited in note 18).

²⁰ Since this distribution will determine the draws at both the appeals court level and at the supreme court level, it is commonly known to all, and is stable (that is, we ignore any legislative or judicial innovations that might cause the distribution to vary over time).

state becomes R. Let z measure the possible selections and interpretation of law concerning state sovereignty, the eleventh amendment, and the ability of the Congress to create a private cause of action by an individual against a state. Low values of z are taken to be consistent with cases and arguments reinforcing state sovereign immunity (that is, they favor R in the case at hand) while high values of z are consistent with cases supporting the ability of Congress to require states to respond to specific types of private suits (that is, they favor P in the case at hand). Note that “middling” values of z would indicate that the applicable law was ambiguous, conflicting or incomplete; this suggests that the case may be a “close call.” We return to an example of this below (see Section IV) when we discuss a dissent by Judge Kozinski from a denial of an *en banc* re-hearing of *International Olympic Committee v. San Francisco Arts and Athletics*, 789 F.2d 1319 (1986).

Upon hearing the case, AC judges learn which litigant they prefer to win (given their own jurisprudential perspectives) and vote accordingly, resulting in (we assume) a split vote. We associate M with the aggregate position of those in the majority, and m with the position of the minority, thereby treating the appeals court as if it had two members. In addition, M and m each privately observe a signal (denoted, respectively, z_M and z_m) that is informative about the supreme court majority’s ultimate view of the relevant law governing the case (if it where heard). It is these private signals which are (truthfully) revealed through reasoned opinions.²¹

In keeping with the earlier discussion, assume M provides a *reasoned opinion* $s_M = z_M$. The dissenter, m , on the other hand, can provide a *non-reasoned dissenting opinion*, $s_m = \emptyset$, or he can provide a *reasoned dissenting opinion*, $s_m = z_m$, promoting the case for review by the court above. We assume that the majority must write a reasoned opinion because its decision will be precedential, at least within its circuit. A generalization of this model might also allow M to conserve resources by writing a non-reasoned opinion; this might be a best response to a belief that m will write a non-reasoned opinion.²² Although the opinions might include a statement of the facts determined at trial, the facts are common knowledge and their rep-

²¹ Judges and justices in the federal system are appointed for life and we assume that the repeated game aspects of such interactions encourage truthful revelation. One might also think that individual ideological considerations might color the revelation of a signal; we abstract from this (allowing for such “honest filtering” is possible, but unnecessarily complicates the current analysis).

²² Thus, one could consider a non-cooperative game in opinion-writing, but this would result in a substantial increase in the complexity of the analysis, so we postpone this until a future paper.

resentation is suppressed in the analysis below.²³ Let the combined output of the appeals court be denoted $s_{AC} \equiv (s_{M'}, s_m)$.

The losing party at AC becomes the petitioner, P, who requests a grant of cert at the supreme court (SC); for simplicity, we assume that it is always a dominant strategy for P to petition SC for a grant of cert and to pursue the case if cert is granted, and that it is a dominant strategy for the winner at AC, who is now the respondent (R), to defend his win. If cert is granted and a hearing is held, a majority at SC observes z_{SC} as the relevant law governing the case. Finally, let p_{SC} be the probability that (conditional on cert being granted) P wins at SC. Since higher values of z_{SC} should result in a higher likelihood of a majority forming that reverses AC and makes P the winning litigant, we make the following assumption:

Assumption 1.

- i) $z_{M'}$, $z_{m'}$ and z_{SC} are affiliated random variables, with density $h(z_{M'}, z_{m'}, z_{SC})$;
- ii) there exists a strictly increasing function, $p(\bullet)$, such that $p_{SC} = p(z_{SC})$.

Assumption 1(i) states that the z -draws made by M, m and any resulting majority on SC (if the case were heard) are *affiliated* random variables. This means that increases in either z_M or z_m are likely to be associated with increases in z_{SC} , so that information about the AC members' observations about the law are useful (i.e., informative) to justices on SC when estimating z_{SC} . Thus, it is rational for each justice to estimate what SC is likely to observe if the case is heard, in terms of the law z_{SC} , by employing the prior joint density $h(z_{M'}, z_{m'}, z_{SC})$ and any information revealed by M and m via the opinions summarized by s_{AC} .

Assumption 1(ii) means that, independent of differences in jurisprudential considerations, given the direction of interpretation of z , increases in z_{SC} should imply an increase in the likelihood that P wins at SC. This is because each justice's willingness to join a majority holding for P should be increasing in z_{SC} , and therefore the likelihood of a majority forming in favor of P should also be increasing in z_{SC} . This doesn't require that all justices agree on whether P should win if the case is heard. This monotonicity means that $z_{M'}$, $z_{m'}$ and p_{SC} are also affiliated random variables. Thus, since z_M and z_m are in-

²³ We recognize that the expression of facts in an opinion may also differ between M and m; for example, for a discussion of how Judge Benjamin Cardozo stated (or altered) the facts in the famous *Palsgraf* case, see Richard A. Posner, *Cardozo: A Study in Reputation* ch 3 (Chicago, 1990). Keeping track of this would needlessly complicate the exposition.

formative about p_{SC} , justices at SC who are deciding whether to vote to grant cert and who are trying to forecast what is likely to happen should cert be granted, will use s_{AC} to forecast p_{SC} . From the foregoing it can be seen that we are requiring a case to be granted cert before a justice observes z_{SC} ; this implies that while the arguments made by M and m may influence the decision by SC about granting cert, they do not influence the final decision of SC if cert is granted, which depends only on z_{SC} . Note, however, that since each justice employs the same procedure for estimating p_{SC} , all justices and judge m will obtain the same estimate of p_{SC} if judge m's information is revealed in s_{AC} , that is, if judge m's dissent is reasoned.

Thus, we think of P's appeal for a grant of certiorari as consisting purely of s_{AC} ; based on this and knowledge of h, each justice can form: 1) her beliefs $b(z_M, s_m)$ about z_m ; and 2) her posterior estimate of p_{SC} , which we denote as $\rho(z_M, b(z_M, s_m))$.²⁴ By beliefs we mean conjectures by a justice as to what possible values of z_m would cause the dissenter at AC to write, given that the majority observation is known (since it was revealed) to have been z_M . Beliefs are simple when a reasoned dissent is provided, since the opinion reveals z_m .

Beliefs are more complicated when a non-reasoned dissent is provided. When m writes a non-reasoned opinion, then $s_m = \emptyset$, meaning that $b(z_M, \emptyset)$ is a set of possible z_m -values for which the justices believe judge m would choose to write a non-reasoned opinion; this set will be described in more detail in the analysis section but it is the same for all justices, since $h(\bullet, \bullet, \bullet)$, z_M , and s_m are all common knowledge. More precisely, each justice's posterior estimate of p_{SC} (that is, after observing z_M and a non-reasoned opinion by m, inducing beliefs $b(z_M, \emptyset)$) is:

$$\rho(z_M, b(z_M, \emptyset)) = E\{p_{SC} \mid z_M \text{ and } z_m \in b(z_M, \emptyset)\},$$

where the expectation is taken over z_m conditional on z_M .²⁵

If m writes a reasoned dissenting opinion, then $s_m = z_m$ and, therefore, $b(z_M, s_m) = z_m$. Since $\rho(z_M, z_m)$ is the expected value of p_{SC} given z_M and z_m , a consequence of affiliation is that $\rho(z_M, z_m)$ is non-decreasing in both of its arguments,²⁶ for the sequel we assume that $\rho(z_M, z_m)$ is strictly increasing in both of its arguments.

²⁴ We abstract from added arguments by P and R, *amicus curiae* briefs, etc., all of which add to the information that may influence SC to grant cert, but all of which would be produced after m has written an opinion. Much of the analysis in this paper could be extended to these other sources of influence on the cert decision, but this needlessly complicates the exposition.

²⁵ Technical details for constructing $\rho(z_M, b(z_M, s_m))$ are provided in the Web Appendix.

²⁶ Paul R. Milgrom and Robert J. Weber, *A Theory of Auctions and Competitive Bidding* Theorem 5, 50(5) *Econometrica* 1089 (1982).

Modeling Justices and Judges. We view the justices on SC as playing a (possibly) two-stage game with one-another. In the first stage, a decision is made by a subset of the justices whether to grant or deny cert. The U.S. Supreme Court is comprised of nine justices, at least five of whom form a majority on a case, and at least four of whom had to vote for cert in order for the case to be heard.²⁷ We simplify this to a three-justice panel, where one justice's vote is required to grant cert, and two justices are required for a majority. This simplification means that we do not need to consider coalition formation in the first stage, but we preserve the need for the justice considering voting for cert to think ahead about what will happen when the case is actually heard by the full court. As in the U.S. Supreme Court, a justice voting for cert is not committed to being part of a majority to vote to reverse the lower court's ruling.

In the second stage, if the case is granted cert, it is heard, z_{SC} is observed, and a vote is taken, determining whether the outcome is P or R. Therefore, in order to make a decision as to whether to vote to grant or to deny cert, the justices must consider the likely resolution of the second-stage, or continuation, game which would arise if cert were granted.²⁸ Figure 1 illustrates one possible version of this second stage as a non-cooperative, simultaneous move game involving three justices at SC ($i = 1, 2, 3$). Each justice can vote for P or R, and the moves are simultaneous as indicated by the dashed lines which show each justice's information set (i.e., that, after observing z_{SC} but before voting, no justice knows how any other justice has chosen to vote). This is a highly simplified model, but the real detail is in the likelihoods (the β -terms) listed on the far right of the diagram, which we discuss after first describing individual payoffs.

Also note that we would need to deduct from each payoff the opportunity cost associated with having heard the case, which we take to be independent of the complexity of, or the issues in, the case. More precisely, assume that each justice anticipates a cost of k_{SC}

²⁷ We ignore the role of Supreme Court clerks, who expend significant effort helping justices filter cases for cert consideration. We assume these clerks are instructed by the justices and execute their responsibilities accordingly. For details about the "cert pool" process, see Perry, *Deciding to Decide* (cited in note 11); Lee Epstein and Jack Knight, *The Choices Justices Make* (cited in note 7). These sources also discuss the "Rule-of-Four," wherein at least four votes are generally required to grant cert.

²⁸ Alternative models of this continuation game are possible. Schwartz proposes a (complete information) non-cooperative voting model of this continuation game. Edward P. Schwartz, *Policy, Precedent, and Power: A Positive Theory of Supreme Court Decision-Making* 2(2) *J L, Econ, & Org* 219 (1992). The key analytical detail for our analysis, which incorporates uncertainty about what would happen at a hearing if cert were granted, is contained in Assumption 2 below.

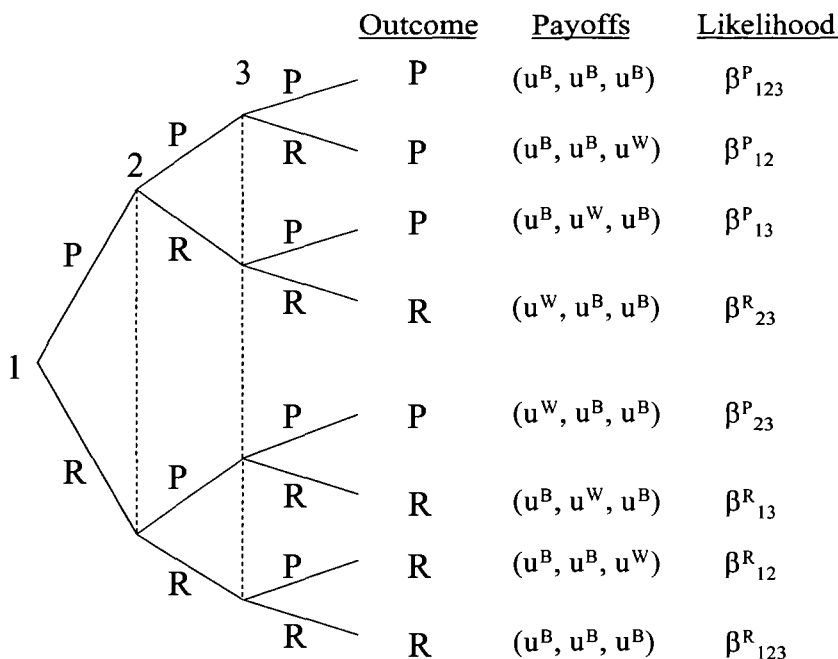


Figure 1. Anticipated Voting Game if Cert is Granted

should cert be granted for a case. This cost reflects not only the obvious imposition of actually having a hearing (rather than playing golf, etc.) but, more importantly, the opportunity cost of foregoing another case that the justice could have used to make or clarify law. Generally, one would expect a smaller cert budget to imply a higher value of k_{SC} . All of this will be used to construct each justice's expected payoff from voting to provide cert; we turn to this after providing the basic details of the payoff computations and the assumptions imposed in the analysis.

Outcome Payoffs. A case decided (and published) at AC is precedential for that appeals court; it is at best citable (and possibly persuasive) for appeals courts in other jurisdictions, but it is not precedential in any other jurisdiction. If P's petition to SC for a grant of cert is successful, then the outcome of the case at SC is precedential for the entire hierarchy (that is, in all jurisdictions). We assume that judges and justices want to influence the law; the outcome of a case yields payoffs for both judges and justices with respect to two attributes: the decision about who wins, and the level at which this decision is ulti-

mately precedential, as this determines the breadth of influence of the case on the law. With respect to the first attribute (who wins), for convenience we refer to a decision as being “for P” or “for R.” However, we do not necessarily assume that justices and judges literally care about the litigating parties; rather, a decision on a case reflects an interpretation of the law about which each justice has a jurisprudential philosophy; the winner may not be personally appealing, but the point of law made is viewed as important to those in a majority.

With respect to the second attribute (how global is the precedential value), this is determined by whether the petition for cert is granted or not. We assume that judges and justices value both attributes of an outcome. For example, judge *m*, who favors P, would presumably rank having the case granted cert, but having the AC decision subsequently affirmed, worse than having the petition for cert not granted, since (at least) that limits the breadth of a holding with which he disagrees to his circuit alone. Similarly, a justice at SC who might forecast a win by R (and would find this undesirable) also might prefer to avoid making the attendant law precedential for all jurisdictions, and might therefore opt to vote against granting cert. Thus, for each judge and justice, outcomes can be ranked as best (B), second best (SB), second worst (SW), and worst (W), depending upon whether cert is granted (yielding outcomes which are B or W) or not (yielding outcomes which are SB or SW) as well as their view of the case at hand (their preferences over P versus R). Each judge or justice has utility over these outcomes; these are denoted, respectively, as u^B , u^{SB} , u^{SW} , and u^W . Since we will never engage in interpersonal comparisons, we suppress a subscript that would denote individual judges and justices, but there is no reason for the absolute levels of the utility values to be the same for all individuals. Strict preference means that $u^B > u^{SB} > u^{SW} > u^W$.

While we typically think of the preference ordering as being strict, in some extreme cases this ordering may be weak instead. For instance, if a justice believes that only the outcome of the case at hand in the originating circuit matters (that is, there is no additional value associated with having the case decided at the supreme court, or having the precedent spread to other circuits), then this justice views the best and second-best outcomes as equivalent because they entail the same outcome, and the level at which it is imposed doesn't matter to the justice. For the same reason, this justice would view the second-worst and worst outcomes as equivalent. However, the second-best and second-worst outcomes are still not equivalent as they entail different outcomes for the case at hand. Thus, we allow a justice to have the following preference ordering: $u^B = u^{SB} > u^{SW} = u^W$. In this special

case, all that matters is whether AC's ruling is left standing or is reversed: this is the case of pure error correction.²⁹ The other form of weak preference ordering involves a justice who believes that a precedent only really matters if it is established at SC. Thus, we allow a justice to have the following preference ordering: $u^B > u^{SB} = u^{SW} > u^W$. For this justice, what matters is the breadth of the decision and how it creates a precedent applicable to all circuits.³⁰ Here the emphasis is on creating a desired alignment of the circuits more than bringing a particular circuit into an existing alignment.³¹

Justice i. Denote the likelihood that, say, justices 1 and 3 vote for P, thereby reversing the decision at AC, by β_{13}^P . More generally, $\beta_{ij}^P \equiv \Pr\{i \text{ and } j \text{ alone form a majority for P}\}$, for $i \neq j$, $i, j = 1, 2, 3$, with a similar definition for the β -terms with a superscript R. Also, let β_{123}^P be the probability that there is a unanimous decision for P and let β_{123}^R be the probability that there is a unanimous decision for R. Thus, the β -terms provide the likelihood of any particular alignment of voting. More importantly, all of these likelihoods are a function of the case at hand; that is, all the β -terms are functions of the facts and z_{SC} .

If justice i knew the realized value of z_{SC} she would compute (say) β_{ij}^P as:

$$\Pr\{i \text{ and } j \text{ alone form a majority} | P \text{ wins}\} \times \Pr\{P \text{ wins}\}$$

where the probability $\delta_{ij}^P \equiv \Pr\{i \text{ and } j \text{ alone form a majority} | P \text{ wins}\}$ incorporates all the complexities of how the case influences the formation of majorities on SC, and $p_{SC} = \Pr\{P \text{ wins}\}$. Clearly, while one might expect both terms to reflect the level of z_{SC} , justice i is com-

²⁹ As an example, think of AC as the Florida Supreme Court and the case as *Bush v Gore*, 531 US 98 (2000). Also, see Richard A. Posner, *The 2000 Presidential Election: A Statistical and Legal Analysis*, 12 S Ct Econ Rev 1 (2004). The Supreme Court's majority argued that their decision only concerned the case at hand, that settling who won the election via the court was essential, that their decision had no precedential value, and that it was to correct what it deemed a conflict between the Florida Court's action and federal law. In other words, what mattered was the case at hand and bringing the lower court into alignment with what the Supreme Court majority conceived of as existing law.

³⁰ Admittedly, some Supreme Court decisions are not fully implemented by all lower courts, since some may resist the new precedent. Even if implementation is not complete, $u^B > u^{SB}$.

³¹ For example, in *Eastern Enterprises v Apfel*, 524 US 498 (1998), the Supreme Court found a critical clause of the Coal Act unconstitutional, reversed the First Circuit's decision and called into question similar decisions made in five other circuits, and provided new standards for future appeals courts' decisions concerning economic regulation. See Andrew F. Daughety and Jennifer F. Reinganum, *Stampede to Judgment: Persuasive Influence and Herding Behavior by Courts*, 1 Am L & Econ Rev 158 (1999).

puting her expected payoffs for the tree in Figure 1 when she is considering voting to grant or deny cert, which is *before* she has observed z_{SC} . Thus, we make the following simplifying assumption regarding the structure of β_{ij}^p (and similar assumptions for the other β -terms):

Assumption 2.

- (i) Justice i estimates p_{SC} by using the available information at the time of deciding cert. Thus, justice i uses $\rho(z_{M'}, b(z_{M'}, s_m))$ to estimate p_{SC} ;
- (ii) Justice i assumes that $\Pr\{i \text{ and } j \text{ alone form a majority} | P \text{ wins}\} \equiv \delta_{ij}^p(E(z_{SC}))$, where $E(z_{SC})$ is the unconditional mean of z_{SC} .

Assumption 2 means that the signals from AC influence the estimation of p_{SC} , but that the δ_{ij}^p -parameters are taken as being influenced only by the long-run behavior of z_{SC} (that is, the long-run views of the justices), rather than the signals about the current case; this is formalized by making the δ -parameters a function of $E(z_{SC})$, the unconditional mean of z_{SC} , alone; for ease of reading we suppress this dependence below.

Using this structural assumption to summarize the continuation game, the *ex ante* (prior to the cert decision) expected utility for justice 1 if cert is granted is (C stands for cert being granted):

$$\begin{aligned} \pi_1(C, s_{AC}) = & u^B \rho(z_{M'}, b(z_{M'}, s_m)) [\delta_{123}^P + \delta_{12}^P + \delta_{13}^P] \\ & + u^B (1 - \rho(z_{M'}, b(z_{M'}, s_m))) [\delta_{123}^R + \delta_{12}^R + \delta_{13}^R] \\ & + u^W [\rho(z_{M'}, b(z_{M'}, s_m)) \delta_{23}^P + (1 - \rho(z_{M'}, b(z_{M'}, s_m))) \delta_{23}^R] \\ & - k_{SC}. \end{aligned}$$

To understand this computation, note that justice 1 might achieve her best outcome if P wins and she ends up being in a majority for P (the first term) or if P loses and she ends up being in the majority for R (the second term). The third term indicates that, if she ends up in a minority for R but P wins, or she ends up in a minority for P but R wins, she receives the utility for the worst outcome, since not only did her preferred litigant lose, but the resulting precedential value will apply to all jurisdictions. The fourth term indicates that the expected payoff to justice 1 must deduct the opportunity costs of having chosen to consider the case at hand by granting cert. Similar equations can be constructed for justices 2 and 3.

Inspection of the above formula indicates that (since the δ -terms are constant with respect to changes in s_{AC}) the expected utility for justice i can be written more simply as:

$$\begin{aligned} \pi_i(C, s_{AC}) = & u^B [\rho(z_{M'}, b(z_{M'}, s_m)) \alpha_i^P + (1 - \rho(z_{M'}, b(z_{M'}, s_m))) \alpha_i^R] \\ & + u^W [\rho(z_{M'}, b(z_{M'}, s_m)) (1 - \alpha_i^P) + (1 - \rho(z_{M'}, b(z_{M'}, s_m))) (1 - \alpha_i^R)] \\ & - k_{SC}, \end{aligned}$$

where (i, j, and k all different) $\alpha_i^P \equiv \delta_{123}^P + \delta_{ij}^P + \delta_{ik}^P$ and $\alpha_i^R \equiv \delta_{123}^R + \delta_{ij}^R + \delta_{ik}^R$. The term α_i^P is the probability that justice i is in the majority (which can include a unanimous decision) given P wins, while α_i^R is the probability that justice i is in the majority given R wins.

If cert is denied, then the appeals court's ruling stands, but it constitutes a precedent only within that circuit. This means that justices achieve their second-best, or second-worst, outcomes. For example, if cert had been granted and justice i would have been in the majority holding for P, then denial of cert means that the AC's outcome stands, yielding justice i her second-worst outcome. Thus, to compute the payoff from a denial of cert, we need to consider the alternatives that might have occurred if cert had been granted and then adjust for the fact that without a grant of cert, AC's decision is neither affirmed nor reversed. Let $\pi_i(\text{NC}, s_{AC})$ denote justice i's *ex ante* expected utility should cert be *denied* (NC stands for no cert, that is, cert being denied), given the vector s_{AC} of appeals court opinions. Then, again for justice 1:

$$\begin{aligned} \pi_1(\text{NC}, s_{AC}) = & u^{SB}(1 - \rho(z_{M'}, b(z_{M'}, s_m)))[\delta_{123}^R + \delta_{12}^R + \delta_{13}^R] \\ & + u^{SW}\rho(z_{M'}, b(z_{M'}, s_m))[\delta_{123}^P + \delta_{12}^P + \delta_{13}^P] \\ & + u^{SB}\rho(z_{M'}, b(z_{M'}, s_m))\delta_{23}^P + u^{SW}(1 - \rho(z_{M'}, b(z_{M'}, s_m)))\delta_{23}^R. \end{aligned}$$

This equation has an analogous interpretation to $\pi_1(C, s_{AC})$ above. Note that in the first term, justice 1 gets her second best utility weighted by the probability R would have won (if heard) times the probability that she would have been part of a majority for R. Thus, she would have ended up preferring R (and spreading that result), getting her first-best outcome, but since cert was denied and AC had decided for R, she achieves her second-best outcome. The second term involves her second-worst outcome, because if the case had been heard by SC, the weights on u^{SW} reflect the likelihood of P winning and justice 1 being part of the majority for P. Denial of cert means this possibility can't come about and thus AC's decision for R stands. Finally, the third and fourth terms account for her ending up in a minority position if the case were heard, but it was not, leaving the AC decision standing. Note that since cert was not granted, k_{SC} will not be expended. As before, we re-express this formula (now for justice i), using α_i^P and α_i^R to replace the relevant δ -terms:

$$\begin{aligned} \pi_i(\text{NC}, s_{AC}) = & u^{SB}[\rho(z_{M'}, b(z_{M'}, s_m))(1 - \alpha_i^P) + (1 - \rho(z_{M'}, b(z_{M'}, s_m)))\alpha_i^R] \\ & + u^{SW}[\rho(z_{M'}, b(z_{M'}, s_m))\alpha_i^P + (1 - \rho(z_{M'}, b(z_{M'}, s_m)))(1 - \alpha_i^R)]. \end{aligned}$$

Justice i is willing to vote to grant cert if and only if $\pi_i(C, s_{AC}) \geq \pi_i(\text{NC}, s_{AC})$. That is:

$$V_i(z_{M'}, b(z_{M'}, s_m)) \equiv \rho(z_{M'}, b(z_{M'}, s_m))\gamma_i^P + (1 - \rho(z_{M'}, b(z_{M'}, s_m)))\gamma_i^R - k_{SC} \geq 0,$$

where $\gamma_i^P = \alpha_i^P(u^B - u^{SW}) + (1 - \alpha_i^P)(u^W - u^{SB})$ and $\gamma_i^R = \alpha_i^R(u^B - u^{SB}) + (1 -$

$\alpha_i^R)(u^W - u^{SW})$.³² The expression γ_i^P is the expected payoff (net of the *status quo* payoff associated with AC's decision) to justice i if the majority at SC finds for P. To see this, recall that $\alpha_i^P(u^B - u^{SW})$ is the probability that i is in the majority when P wins at SC times the associated gain (since i favors P in this event, her payoff increases from u^{SW} to u^B). Similarly, $(1 - \alpha_i^P)(u^W - u^{SB})$ is the probability that i is in the minority when P wins at SC times the associated loss (since i favors R in this event, her payoff decreases from u^{SB} to u^W). By the same reasoning γ_i^R is the expected payoff (net of the *status quo* payoff associated with AC's decision) to justice i if the majority at SC finds for R. The expression $V_i(z_M, b(z_M, s_m))$ represents the net payoff for justice i if cert is granted rather than denied.³³ Thus, justice i will vote to grant cert if this expression is positive, will vote to deny cert if it is negative and will be indifferent if this expression is zero.

Judge m. Judge m is willing to write a reasoned dissenting opinion (thereby revealing z_m), if doing so would *provoke* cert, whenever:

$$\rho(z_M, z_m)u^B + [1 - \rho(z_M, z_m)]u^W - u^{SW} \geq k_{AC}.$$

The first term on the left-hand-side of this expression is judge m's posterior estimate of p_{SC} times the utility of judge m's best outcome (a finding for P, reversing the appeals court in this circuit and establishing a precedent for all circuits). Of course, with the complementary probability, SC may generate judge m's worst outcome (affirming the AC in this circuit and establishing a precedent for all circuits); the second term on the left-hand-side reflects this consideration. Finally, the third term on the left-hand-side is judge m's utility if cert is denied; the current ruling prevails, but only at the level of this circuit, resulting in a utility of u^{SW} . Thus, the left-hand-side of the inequality above is the net expected utility from writing a reasoned dissenting opinion that provokes cert.

The term on the right-hand-side of the inequality is judge m's cost associated with writing a reasoned dissent, $k_{AC} > 0$. This is both an effort cost (the dissent needs to be well-argued and complete, which takes time, even if clerks are employed) but, more significantly, it is an opportunity cost. It is an opportunity cost both in the sense that writing a reasoned dissenting opinion on one case may preclude writing such an opinion on another case, and it is an opportunity cost for the writer because it contributes to conflict and may create ten-

³² From the previous discussion of $\rho(z_M, b(z_M, s_m))$, this means that $V_i(z_M, b(z_M, s_m)) = E\{V_i(z_M, z_m) | z_m \in b(z_M, s_m)\}$, where the expectation is taken over z_m conditional on z_M .

³³ An alternative interpretation of $\pi_i(C, s_{AC}) \geq \pi_i(NC, s_{AC})$ is that the right-hand-side of the inequality is justice i's reservation value (which is endogenously determined). Thus, a case must provide at least this value in order to garner a grant of cert.

sion between the dissenter and the majority on his court. As Posner observes:

I used to think that the only possible explanation for the non-reasoned separate opinion besides sheer laziness was the pressure that caseload growth was exerting on the time of federal judges. Judges are supposed to base their judgments on grounds capable of being rationally explained and defended even though the choice of grounds may be intuitive and their validity not fully demonstrable by rational processes. The nonreasoned opinion amounts to saying, 'I disagree with you but I won't say why,' thus flouting the obligation of the appellate judge to give public reasons for judgments. But I have come to realize that there are other, more edifying explanations for this form of opinion: the maintenance of collegiality and the promotion of legal certainty. A fully articulated dissenting opinion, unless ineptly argued, undermines the authority of the majority opinion, irritating the judges in the majority and unsettling the law by inviting a narrowing interpretation of the decision or an effort to overrule it. A judge who wishes to be recorded as disagreeing with the majority but does not think the disagreement momentous enough to warrant an effort to produce these effects is well advised to dissent without opinion. Some of our greatest judges, including Holmes and Cardozo, regularly resorted to this manner of dissent even though they could have found the time to write a full-scale dissent.³⁴

Thus, judge m is willing to write a reasoned dissenting opinion, if it would provoke cert, whenever his net payoff, $V_m(z_M, z_m) \equiv \rho(z_M, z_m)u^B + [1 - \rho(z_M, z_m)]u^W - k_{AC} - u^{SW}$, is non-negative; judge m is unwilling to write such an opinion, even if it would provoke cert, if $V_m(z_M, z_m) < 0$. The function $V_m(z_M, z_m)$ is non-negative whenever:

$$\rho(z_M, z_m) \geq [u^{SW} - u^W + k_{AC}] / [u^B - u^W].$$

The right-hand-side above is always positive, and is less than 1 when $k_{AC} < u^B - u^{SW}$.

On the other hand, judge m is willing to expend effort k_{AC} to prevent cert if and only if $u^{SW} - k_{AC} > \rho(z_M, z_m)u^B + [1 - \rho(z_M, z_m)]u^W$; that is, if and only if:

$$\rho(z_M, z_m) \leq [u^{SW} - u^W - k_{AC}] / [u^B - u^W].$$

Judge m might want to prevent cert if he fears that a grant of cert is too likely to result in M 's decision being *affirmed and spread to all*

³⁴ Posner, *The Federal Courts* 175 [cited in note 6].

circuits. The right-hand-side above is always less than 1; moreover, it is positive as long as $k_{AC} < u^{SW} - u^W$. Alternatively put, a sufficient condition such that judge m will not write “preventive” reasoned dissents is that $k_{AC} > u^{SW} - u^W$.³⁵ We wish to focus on reasoned dissents designed to provoke cert, and to do that we will rule out preventive reasoned dissents by assuming that k_{AC} is sufficiently large. For the remainder of the paper we will focus on reasoned dissenting opinions written to provoke, not prevent, cert; this is captured in the following assumption:

Assumption 3. $u^{SW} - u^W < k_{AC} < u^B - u^{SW}$.

That is, writing a reasoned dissent is sufficiently costly that minority judge m would never make the effort simply in order to prevent cert, but it is not too costly to pursue in order to provoke cert.

Sympathetic and Unsympathetic Justices. Given that judge m has written a reasoned dissenting opinion, justice i ’s net payoff becomes:

$$V_i(z_M, z_m) = \rho(z_M, z_m)(\gamma_i^P - \gamma_i^R) + \gamma_i^R - k_{SC}.$$

Notice that (assuming that $\gamma_i^P \neq \gamma_i^R$) the function $V_i(z_M, z_m)$ is monotone in z_m , since $\rho(z_M, z_m)$ is increasing in z_m ; $V_i(z_M, z_m)$ is increasing in z_m if $\gamma_i^P > \gamma_i^R$ and decreasing in z_m if $\gamma_i^P < \gamma_i^R$.

Definition 1. Justice i is *sympathetic* to judge m ’s point of view regarding cert if $V_i(z_M, z_m)$ is increasing in z_m . Justice i is *unsympathetic* to judge m ’s point of view regarding cert if $V_i(z_M, z_m)$ is decreasing in z_m .

Since $V_m(z_M, z_m)$ is increasing in z_m , a sympathetic justice’s preferences concerning granting cert (which are also increasing in z_m) are aligned, though not necessarily perfectly, with those of judge m , while an unsympathetic justice’s preferences regarding granting cert (which are decreasing in z_m) are inversely aligned though, again, not necessarily perfectly, with those of judge m . Figure 2 illustrates how the space of (α_i^P, α_i^R) -pairs for justice i is subdivided into sympathetic and unsympathetic regions. At one end of the dashed 45°-line is a pure contrarian justice (i.e., $(0,0)$) while at the other end is a pure majoritarian justice (i.e., $(1,1)$). The dark, upward-sloping line represents “neutral” sympathy (i.e., $\gamma_i^P = \gamma_i^R$); it intersects the 45°-line at $\alpha_i^P = \alpha_i^R = 1/2$, the α_i^P -axis at $(u^{SB} - u^{SW}) / (u^B - u^W + u^{SB} - u^{SW})$ and the top of the $[0, 1] \times [0, 1]$ box (where $\alpha_i^R = 1$) at $\alpha_i^P = (u^B - u^W) / (u^B - u^W + u^{SB} - u^{SW})$. Left of the neutral sympathy line are combinations of α_i^P and α_i^R such that

³⁵ On the whole, one would expect that preventive opinions, seeking to convince SC not to grant cert, are more likely to be written by majorities than by minorities.

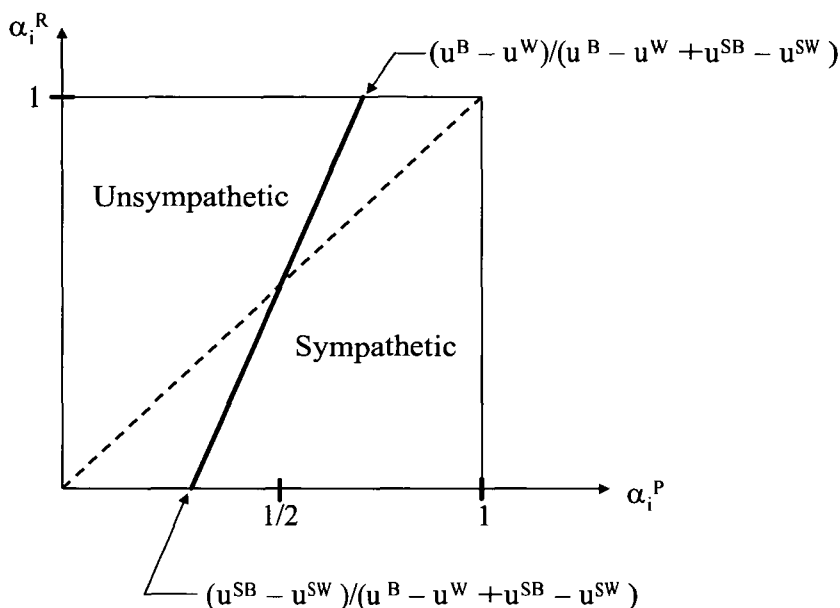


Figure 2. Sympathetic and Unsympathetic Regions for Justice i

justice i is unsympathetic; to the right are combinations such that justice i is sympathetic. The foregoing analysis assumed that $u^B > u^{SB} > u^{SW} > u^W$. Recall the two special (extreme) configurations of utilities raised earlier, namely: 1) $u^B = u^{SB} > u^{SW} = u^W$ and 2) $u^B > u^{SB} = u^{SW} > u^W$. The first configuration was identified with cases wherein the primary concern might be bringing a circuit “back into line” (pure error correction) with supreme court perceptions of existing law. Thus, for this configuration of utilities, the neutral sympathy line is vertical at $\alpha_i^P = 1/2$, so sympathy requires simply that $\alpha_i^P > 1/2$ for some justice.

Alternatively, the second configuration above ($u^B > u^{SB} = u^{SW} > u^W$) was identified with cases wherein the primary concern was the payoff from extending the outcome from the AC in question to all other jurisdictions. In this case the neutral sympathy line is the 45°-line, so sympathy towards granting cert is reinforced by stronger jurisprudential preference (towards P).

Persuadable and Predisposed Justices. Finally, from the perspective of this paper, the primary purpose of a dissent by judge m is to persuade SC to grant cert and hear the case. The following definition classifies justices as being persuadable or predisposed; there is no reason for judge m to even consider providing a reasoned dissenting opinion if all justices are (given z_M) predisposed to grant or deny cert.

Definition 2. Justice i is *persuadable* regarding cert if $V_i(z_{M'}, 0)$ and $V_i(z_{M'}, 1)$ are of opposite sign. Justice i is *predisposed to grant cert* if $V_i(z_{M'}, z_m) \geq 0$ for all z_m and is *predisposed to deny cert* if $V_i(z_{M'}, z_m) \leq 0$ for all z_m .

If justice i is persuadable, then there exists a critical value of z_m , $x_i \in (0, 1)$, such that $V_i(z_{M'}, x_i) = 0$. This means that there is a (non-degenerate) set of values of z_m that judge m expects would result in justice i voting to grant cert, and a (non-degenerate) set of values of z_m that judge m expects would result in justice i voting to deny cert. On the other hand, if justice i is predisposed (either to grant, or to deny, cert), then no such critical value exists in $(0, 1)$.

For a sympathetic and persuadable justice i , the function $V_i(z_{M'}, z_m)$ is increasing in z_m and justice i : 1) will vote to grant cert if a dissenting opinion reports $z_m \in (x_i, 1]$; 2) will vote to deny cert if a dissenting opinion reports $z_m \in [0, x_i]$; and 3) is indifferent for $z_m = x_i$. For an unsympathetic and persuadable justice i , the function $V_i(z_{M'}, z_m)$ is decreasing in z_m and justice i : 1) will vote to grant cert if a dissenting opinion reports $z_m \in [0, x_i]$; 2) will vote to deny cert if a dissenting opinion reports $z_m \in (x_i, 1]$; and 3) is indifferent for $z_m = x_i$.

IV. EQUILIBRIUM ANALYSIS

In what follows, we focus on circumstances involving at least one persuadable justice, since those who are predisposed will vote predictably in one direction, independent of what might be revealed in judge m 's dissenting opinion. Moreover, we assume no justice is predisposed to grant cert; otherwise, there is no analysis to be done as cert is guaranteed. We consider the two most important compositions of SC: a) one justice is sympathetic and persuadable and the other two are predisposed to deny cert and b) one justice is unsympathetic and persuadable and the other two are predisposed to deny cert. In the Web Appendix we also allow for more justices of one type or another, as well as the mixed-sympathies case, but the foregoing cases provide the necessary intuition.

Our results are summarized by two types of equilibria,³⁶ one type wherein cert is granted without a reasoned dissenting opinion ("pull" equilibria) and one type wherein cert is granted only if judge m writes a reasoned opinion reporting z_m in a specific subset of $[0, 1]$; these latter equilibria are called "push" equilibria. It is straightforward to see how pull equilibria can be extended to situations wherein there was no dissent at the AC level and SC chooses to grant cert anyway. Push

³⁶ Formally, we employ perfect Bayesian equilibrium as the solution concept.

equilibria intuitively involve not only dissent but active effort by the minority judge to promote the case.

Pull Equilibrium. The pull equilibrium can be defined in the same way for any composition of the supreme court, while details of the push equilibria vary with SC's composition. We summarize the pull equilibrium below and then proceed to the composition-specific analyses of push equilibria (recall that our court is comprised of three justices, and that a grant of cert can be provided by any one justice).

Definition 3. Pull Equilibrium: At least one justice votes to grant cert without a reasoned dissenting opinion; judge m doesn't write a reasoned opinion for any z_m .

It is straightforward to verify the conditions under which such an equilibrium exists. If at least one justice votes to grant cert without a reasoned dissenting opinion, then judge m need never write one (since he never writes a preventive reasoned opinion by Assumption 3). A pull equilibrium exists if and only if at least one justice finds it optimal to vote to grant cert when judge m writes only a non-reasoned dissenting opinion; that is, if and only if (for some i):

$$V_i(z_M, [0, 1]) = E\{V_i(z_M, z_m) \mid z_m \in [0, 1]\} \geq 0,$$

where the expectation is over z_m given z_M . For example, this inequality is likely to hold if u^B and u^W are both large compared with k_{SC} . Then, though not predisposed, justice i will vote to grant cert even without a reasoned dissent from judge m , simply because the expected value of a decision by the supreme court sufficiently exceeds the cost of review. Notice that a pull equilibrium involves an outcome that is a "first cousin" to what would occur if a justice were predisposed to grant cert. If justice i is predisposed to grant cert then $V_i(z_M, z_m) \geq 0$ for all $z_m \in [0, 1]$; that is, justice i will vote to grant cert no matter what judge m might report. In the case of a pull equilibrium, justice i votes for cert only if her expectation, $E\{V_i(z_M, z_m) \mid z_m \in [0, 1]\}$, is non-negative.

Push Equilibrium With a Sympathetic and Persuadable Justice. Assume that SC is composed of one sympathetic and persuadable justice i , and two justices predisposed to deny cert. We develop the intuition for this case and then state the proposition which characterizes push-equilibrium behavior for this case; the case of multiple sympathetic and persuadable justices is in the Web Appendix.

A candidate for a pure-strategy push equilibrium involves judge m writing a reasoned opinion for relatively high values of z_m and justice i voting to grant cert if and only if judge m writes a reasoned opinion;

we will call this a Sympathetic Push Equilibrium. Recall that $V_m(z_M, z_m)$ is the net expected value to judge m of writing a reasoned dissenting opinion, if doing so would provoke cert. Thus, the point x_m at which judge m is just indifferent is given by $V_m(z_M, x_m) = 0$ (where we assume $x_m \in (0, 1)$ so that judge m is not predisposed to always promote a case for review or to never promote a case for review). For $z_m \in [0, x_m)$, judge m is unwilling to write a reasoned opinion even if doing so would provoke cert; for $z_m \in (x_m, 1]$, judge m is willing to write a reasoned dissent if doing so would provoke cert. Finally, for $z_m = x_m$, judge m is indifferent about writing a reasoned opinion if doing so would provoke cert. Figure 3 illustrates V_m and V_i (and x_m and x_i , respectively; lines are used for simplicity of illustration) for the case where justice i is sympathetic and persuadable. Figure 3(a) illustrates the case wherein $x_m \leq x_i$ while Figure 3(b) illustrates the case wherein $x_m > x_i$.

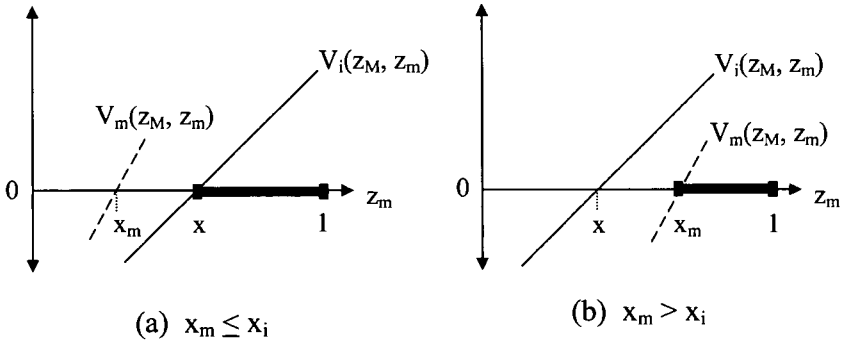


Figure 3. V_i , V_m and Sympathetic Push Equilibria

The equilibrium set of z_m -values for which judge m writes a reasoned dissenting opinion is darkened for emphasis.

First consider case (a), wherein $x_m \leq x_i$. If $x_m < x_i$, then there is an interval $[x_m, x_i)$ of values of z_m for which judge m would be willing to write a reasoned dissent in order to provoke cert, but these values of z_m would result in justice i voting to deny cert: even though judge m is willing to promote a case for review when $z_m \in [x_m, x_i)$, it would be counter-productive to do so. Thus, for $x_m \leq x_i$, judge m would only be willing to write a reasoned dissent for $z_m \in [x_i, 1]$ if it would provoke cert; since $V_i(z_M, z_m) \geq 0$ for all $z_m \in [x_i, 1]$, justice i would be willing to vote for cert upon receiving such an opinion (this is the darkened interval illustrated in Figure 3(a)). Now consider case (b), wherein $x_m > x_i$. Judge m would be willing to write a reasoned dissent for $z_m \in [x_m, 1]$, if it would provoke cert; moreover, justice i would vote to grant cert

upon receiving such an opinion because $V_i(z_{M'}, z_m) > 0$ for all $z_m \in (x_i, 1]$. Since $x_m > x_i$, judge m writes when $z_m \in [x_m, 1]$ (this is the darkened interval in Figure 3(b)).

Combining these results suggests the form of a Sympathetic Push Equilibrium: judge m writes a reasoned dissenting opinion if and only if $z_m \in [\max\{x_m, x_i\}, 1]$.³⁷ Moreover, judge m would promote a case for review only if it is necessary to provoke cert; that is, only if cert would be denied absent a reasoned dissent. This type of equilibrium can exist if and only if it is optimal for justice i to vote to deny cert following the receipt of a non-reasoned dissenting opinion, when judge m writes a reasoned opinion only for $z_m \in [\max\{x_m, x_i\}, 1]$; that is, if and only if:

$$V_i(z_{M'}, [0, \max\{x_m, x_i\}]) = E\{V_i(z_{M'}, z_m) \mid z_m \in [0, \max\{x_m, x_i\}]\} \leq 0.$$

Note that judge m will never promote a case for review when $z_m \in [0, \max\{x_m, x_i\}]$, since writing the reasoned dissent is either too costly or would not have a beneficial effect from judge m 's point of view; thus, upon receiving a non-reasoned dissenting opinion, justice i must include this interval in her posterior beliefs. This interval is the smallest set of z_m -values for which judge m would not promote a case, and it provides the basis for a Sympathetic Push Equilibrium. In contrast, the interval $[0, 1]$ is the largest set of z_m -values that justice i could include in her posterior beliefs following the receipt of a non-reasoned dissent, and it provides the basis for a Pull Equilibrium.

Definition 4. Sympathetic Push Equilibrium: All justices vote to deny cert without a reasoned dissenting opinion. Judge m writes a reasoned dissent if and only if $z_m \in [\max\{x_m, x_i\}, 1]$; justice i votes to grant cert upon receipt of such an opinion.

Interestingly, push and pull equilibria can co-exist. We summarize the conditions under which push and pull equilibria exist (and co-exist), for the case of one sympathetic and persuadable justice, in the following proposition; the proof is sketched below (the complete proof is in the Web Appendix).

Proposition 1. There are only two possible types of pure-strategy equilibrium for the case of one sympathetic and persuadable

³⁷ A mild form of multiple equilibria arises here since the assignment of the left-most point in the interval (to the reasoned versus non-reasoned set) is arbitrary: there is another push equilibrium in which $z_m \in (\max\{x_m, x_i\}, 1]$. To see why, observe that if $x_m \leq x_i$, then judge m will write a reasoned dissent (will be indifferent about doing this) when $z_m = x_i > x_m$ ($z_m = x_i = x_m$) if he thinks an indifferent justice i will vote to grant cert; and judge m won't write a reasoned dissent when $z_m = x_i \geq x_m$ if he thinks an indifferent justice i will vote to deny cert. Similarly, if $x_m > x_i$, then judge m is indifferent about promoting a case for review when $z_m = x_m$ even though it would provoke cert. We ignore this inessential multiplicity in what follows.

justice, assuming that any remaining justices are predisposed to deny cert; at least one pure-strategy equilibrium exists.

- (a) If $E\{V_i(z_M, z_m) \mid z_m \in [0, \max\{x_m, x_i\}]\} > 0$, then only a Pull Equilibrium exists.
- (b) If $E\{V_i(z_M, z_m) \mid z_m \in [0, 1]\} < 0$, then only a Sympathetic Push Equilibrium exists.
- (c) If $E\{V_i(z_M, z_m) \mid z_m \in [0, \max\{x_m, x_i\}]\} \leq 0$ and $E\{V_i(z_M, z_m) \mid z_m \in [0, 1]\} \geq 0$, then both push and pull equilibria exist.

Note that parts (a) and (b) express conditions that exclude one type of equilibrium. Thus, when the hypothesis of part (a) holds, then justice *i* will vote to grant cert without a reasoned dissenting opinion, under the belief that $z_m \in [0, \max\{x_m, x_i\}]$, thereby upsetting a push equilibrium. When the hypothesis of part (b) holds, having received only a non-reasoned dissent, then no justice will vote to grant cert under the belief that $z_m \in [0, 1]$, upsetting a pull equilibrium.

In the Sympathetic Push Equilibrium, the reporting interval (i.e., when $z_m \in [\max\{x_m, x_i\}, 1]$) involves all points above a cutoff. This means that, intuitively, when a case appears to be a “good bet” for reversal, judge *m* will try to promote the case to justice *i*. While the majority opinion in the *Khan v. State Oil*, 93 F3d 1358 (1996) case is not, technically, in the domain of our model (the source of dissent here was the majority opinion), this example would seem to fit under a fairly direct extension of our model. Precedent, as articulated in *Albrecht v. Herald Co*, 390 US 145 (1968), constrained the Appeals Court to vote a particular way, but privately-observed information strongly supported the loser in the case and impugned the policy embodied in *Albrecht*. The Appeals Court’s opinion revealed a very high *z*-value, suggesting that the existing Supreme Court would want to reverse this case and change the law system-wide (from maximum-resale-price-maintenance contracting being a *per se* Sherman Act violation to employing a rule-of-reason criterion for evaluating possible antitrust cases similar to *Khan*).

Another potential example of a sympathetic push equilibrium is *Schriro v. Summerlin*, 124 S Ct 2519 (2004). The Ninth Circuit, in an *en banc* review, *Summerlin v. Stewart*, 241 F3d 1082 (2003), invalidated Summerlin’s death sentence relying on *Ring v. Arizona*, 536 US 584 (2002), in which the Supreme Court decided that an aggravating factor that elevates the applicable penalty to death must be proved to a jury beyond a reasonable doubt (rather than being found *ex post* by a judge). According to Justice Scalia’s majority opinion in *Schriro*, the Ninth Circuit “applied the rule retroactively to respondent’s case, relying on two alternative theories: first, that it was substantive rather

than procedural; and second, that it was a 'watershed' procedural rule entitled to retroactive effect."³⁸ Three judges from the Ninth Circuit's *en banc* review had dissented, arguing that *Ring* essentially extended a previously-established procedural rule to the case of the death penalty (and was therefore procedural rather than substantive); the dissent also provided an extensive discussion of jury accuracy (which was noted in Justice Scalia's opinion) in support of its argument that *Ring* was not a "watershed" procedural rule. Finally, although the Ninth Circuit's majority opinion distinguished its decision from those of several other circuit courts who had previously considered related issues and concluded that *Ring* does not apply, the dissent alleges that: "The majority's contrary holding that *Ring* created a new substantive rule or, in the alternative, a watershed rule of criminal procedure precipitates an unwarranted circuit split."³⁹ Clearly the dissenters are writing to provoke review. The Supreme Court granted cert, and ruled (in a 5-4 decision) that *Ring* is a procedural rule that does not apply retroactively; that is, the majority at the Supreme Court agreed with the dissenting judges at the *en banc* review.

Push Equilibrium with an Unsympathetic and Persuadable Justice: Strange Bedfellows. Now assume that the court is composed of one *unsympathetic* and *persuadable* justice and two justices who are predisposed to deny cert. As we will show below, this case also yields a push equilibrium, and the analysis reveals the importance of the multi-attribute nature of deciding a case. As will be shown below, because judges and justices care not only about correcting errors (as has generally been addressed in the literature), but also care about the breadth of influence their decisions have, then cases that might be thought of as "close calls" (that is, with seemingly moderate values of z_m) will also be promoted for higher court review by dissenting judges via reasoned opinions; Judge Alex Kozinski's dissent in the denial for an *en banc* hearing of *International Olympic Committee v. San Francisco Arts and Athletics*, 789 F2d 1319 (1986) has exactly this flavor (see below). Moreover, these dissenting judges may promote such cases for review even if the *persuadable* justice is *unsympathetic*. This is because the moderate value of z_m implies a moderate value of p_{SC} , thereby encouraging both parties (the dissenting judge and the *unsympathetic* justices) to view the case as a potentially valuable lottery. After all, if the value of z_m was very low, or very high, such a lottery is likely to be unappealing to one side or the

³⁸ *Schriro v Summerlin*, 124 S Ct 2519, 2523 (2004).

³⁹ *Summerlin v Stewart*, 341 F3d 1082, 1132 (2003).

other; it is exactly the fact of the moderate value of z_m observed by judge m that may make the case worthy of promotion for higher court review via the production of a reasoned dissent. We refer to such an equilibrium as involving “strange bedfellows.”

Thus, the candidate for such a pure-strategy push equilibrium involves the possibility that judge m will write a reasoned opinion for an interior interval of z_m values. This is illustrated in Figure 4 where V_i is downward sloping with critical value x_i while V_m and x_m are the same as before. Again, we need to consider two cases: $x_m \leq x_i$, which is illustrated in Figure 4(a) and $x_m > x_i$, which is illustrated in Figure 4(b). The set of z_m -values for which judge m writes a reasoned dissent is darkened for emphasis.

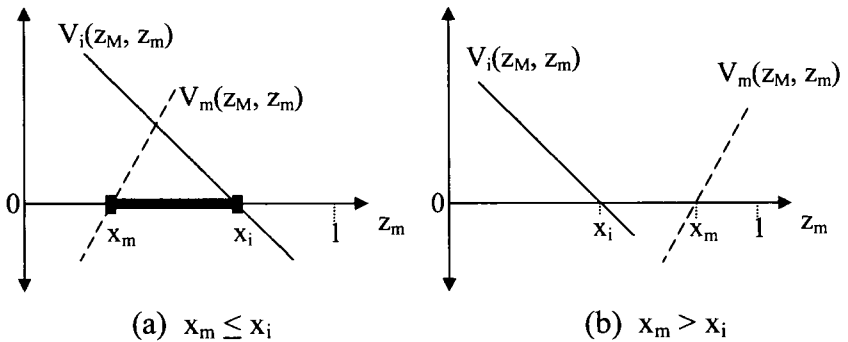


Figure 4. V_i , V_m and Unsympathetic Push

If $x_m \leq x_i$, then there is an interval $[x_m, x_i]$ of values of z_m for which judge m would be willing to write a reasoned dissent in order to provoke cert, and for which justice i would be willing to vote to grant cert upon receiving a reasoned dissent revealing $z_m \in [x_m, x_i]$.⁴⁰ This means that judge m and justice i are “strange bedfellows” in the sense that while their preferences are at least moderately opposed, there is mutual advantage to communication (by judge m promoting a case for review via a reasoned dissent) in the overlapping, darkened interval indicated in Figure 4(a). Judge m is willing to promote the case for review because z_m is not too low, while justice i is willing to vote to grant cert because z_m is not too high.

⁴⁰ The assignment of the endpoints of the interval (to the reasoned dissent set) is arbitrary: there is another push equilibrium in which $z_m \in (x_m, x_i)$. Again, we ignore this inessential multiplicity, which also arises in push equilibria discussed later in the mixed sympathies case.

Notice that this type of equilibrium could not exist if the supreme court justices were motivated only by error correction. Pure error correction corresponds to $u^B = u^{SB} > u^W = u^{SW}$, which implies that $\gamma_i^R = 0$ and $V_i(z_M, z_m) = p(z_M, z_m)(2\alpha_i^P - 1) - k_{SC}$. Now if justice i is unsympathetic, $\alpha_i^P < 1/2$, so $V_i(z_M, z_m) < 0$ for all z_m and hence justice i is predisposed to deny cert. Thus, the “strange bedfellows” equilibrium arises *only* if justice i actually expects to approve of the appeals court’s decision (with sufficiently high probability) and wants to grant cert for the purpose of broadening the precedent. To see this, note that a necessary condition for an unsympathetic justice to be persuadable is $\gamma_i^R = \alpha_i^R(u^B - u^{SB}) + (1 - \alpha_i^R)(u^W - u^{SW}) > 0$, which implies that α_i^R and $u^B - u^{SB}$ must be sufficiently greater than zero (since $(1 - \alpha_i^R)(u^W - u^{SW}) < 0$). In other words, justice i expects it is likely that she will join a majority for R and she views her utility for the best outcome to significantly exceed her utility for her second best outcome; this, in particular, means that she values highly creating a precedent for all the jurisdictions under SC.

If $x_m > x_i$ (as in Figure 4(b)), then judge m would not write a reasoned dissent for any $z_m \in [0, 1]$; he would not promote the case for review if $z_m \in [0, x_m]$, even if doing so would provoke cert, since promotion is sufficiently costly to make $V_m < 0$, and he would not do so for $z_m \in [x_m, 1]$ because then justice i would vote to deny cert. Here we do not have strange bedfellows, because the degree of opposition of interests has eliminated the possibility of equilibrium communication.

Thus, a pure-strategy push equilibrium involves judge m writing a reasoned dissent if and only if $z_m \in [x_m, x_i]$. Moreover, judge m would write such an opinion only if it is necessary to provoke cert; that is, only if cert would be denied absent a reasoned dissenting opinion. This type of equilibrium can exist if and only if it is optimal for justice i to vote to deny cert upon receiving only a non-reasoned dissenting opinion when judge m writes only for $z_m \in [x_m, x_i]$; that is, if and only if $V_i(z_M, [0, x_m] \cup (x_i, 1]) = E\{V_i(z_M, z_m) \mid z_m \in [0, x_m] \cup (x_i, 1)\} \leq 0$. When $x_m > x_i$, the interval $[x_m, x_i]$ is empty and $V_i(z_M, [0, x_m] \cup (x_i, 1]) = V_i(z_M, [0, 1])$.⁴¹

Definition 5. Unsympathetic Push Equilibrium: All justices vote to deny cert without a reasoned dissent. Judge m writes a reasoned dissent if and only if $z_m \in [x_m, x_i]$; justice i votes to grant cert upon receipt of such an opinion.

Again, it is possible for push and pull equilibria to co-exist. In Proposition 2 below, we summarize the conditions under which a pull or

⁴¹ If $V_i(z_M, [0, 1]) \leq 0$, then there is a degenerate push equilibrium, wherein judge m never writes a reasoned dissent and justice i votes to deny cert without an opinion.

unsympathetic push equilibrium exists for the case of one unsympathetic and persuadable justice (the proof is in the Web Appendix, as is the extension to more than one unsympathetic justice).⁴²

Proposition 2. There are only two possible types of pure-strategy equilibrium for the case of one unsympathetic and persuadable justice, assuming that the remaining justices are predisposed to deny cert; at least one pure-strategy equilibrium exists.

- (a) If $E\{V_i(z_M, z_m) \mid z_m \in [0, x_m] \cup (x_i, 1]\} > 0$, then only a Pull Equilibrium exists.
- (b) If $E\{V_i(z_M, z_m) \mid z_m \in [0, 1]\} < 0$, then only an Unsympathetic Push Equilibrium exists.
- (c) If $E\{V_i(z_M, z_m) \mid z_m \in [0, x_m] \cup (x_i, 1]\} \leq 0$ and $E\{V_i(z_M, z_m) \mid z_m \in [0, 1]\} \geq 0$, then both push and pull equilibria exist.

In contrast with the Sympathetic Push Equilibrium, the reporting interval (when it exists) in an Unsympathetic Push Equilibrium is in the interior of $[0, 1]$. Now, rather than being a good bet for reversal, the communication is that the case at hand is likely to be a “close call,” worthy of clarification by SC.

As mentioned earlier, a potential example of an Unsympathetic Push Equilibrium is Judge Alex Kozinski’s dissent in *International Olympic Committee v. San Francisco Arts & Athletics*, 789 F2d 1319 (1986). A panel of the Ninth Circuit (which did not include Judge Kozinski) affirmed an injunction preventing SFAA from using the term “Gay Olympics,” finding that Congress had (statutorily) granted the U.S. Olympic Committee control over the use of the term “Olympics.” The Ninth Circuit subsequently denied a petition to re-hear the case *en banc*, from which Judge Kozinski (and two colleagues) dissented, asserting (among other things) that the statute might conflict with the First Amendment and that the issues deserved the careful scrutiny of further review. This dissent revealed a “middling” value of z_m .⁴³ The Supreme Court granted cert, but affirmed the original Appeals Court decision by a 7-2 margin.⁴⁴ Since at least four justices

⁴² When there are more than one unsympathetic and persuadable justices, existence in pure strategies is not guaranteed; see Proposition 2’ in the Web Appendix.

⁴³ “By raising these concerns I do not necessarily conclude that the Amateur Act is irreconcilably at odds with the first amendment. Indeed, on this barren record I find it difficult to reach any but the most tentative conclusions about this highly unusual statute and its effect upon our personal liberties. . . . With all due respect, the panel’s offhand approval of this injunction, . . . , simply does not measure up to the close appellate scrutiny due first amendment claims and defenses.” *Int’l Olympic Comm v San Francisco Arts & Athletics*, 789 F2d 1319, 1325-26 (1986).

⁴⁴ *San Francisco Arts & Athletics v Int’l Olympic Committee*, 483 US 522 (1987).

must vote for cert, this strongly suggests that some who voted for cert were unsympathetic.

Noise in the Relationship Between a Reasoned Dissent and Obtaining Cert. The common observable characteristic of the family of push equilibria discussed above is that when judge m writes a reasoned dissenting opinion, the supreme court grants cert. We don't observe such regularity in reality; reasoned dissents are written but cert is sometimes denied. A simple extension of our analysis provides a possible reason: k_{SC} is not common knowledge for AC and SC. For example, as discussed earlier, k_{SC} reflects both the direct effort of a justice who hears and decides a case plus the opportunity costs for a justice of considering other cases which might also serve her purposes of influencing law. It is this latter opportunity cost that is unlikely to be known by an AC judge when considering whether to write a reasoned opinion, but may be very clear to the justices on SC when the cert petitions actually arrive. If k_{SC} is a random variable from AC's perspective, with a distribution that is common knowledge to AC and SC (the actual k_{SC} can still be viewed as common knowledge within SC), then judge m will sometimes write reasoned dissents that fail to achieve the necessary (realized) value for V_i .

When, and how, does such noise arise? One clear source is when new justices have joined the court; another is when new areas of law have been opened up by legislatures or the courts. Changes in the Supreme Court's composition suggest that a dynamic learning process is likely to ensue, wherein at the early stage there may be many dissents, and many mis-estimates by dissenters of what will happen at the Supreme Court. Over time, one would expect judges' beliefs about justices' preferences to become more accurate. Of course, the advent of a new issue in the law may mean that reasoned dissents in older areas will fall, but those in the new area will rise.

Implications of These Equilibria for Empirical Analysis of the Reasons for Supreme Court Review.

The preceding analysis also provides an explanation as to why the impact of an AC dissent is likely to be weak in regression analyses of grants of cert.⁴⁵ First, pull equilibria exist, meaning that (in some cases) dissent is not needed for a grant of cert. Second, since one might expect that a controversial issue is likely to mean that some justices may be sympathetic to a dissent and others might be unsympathetic, the resulting equilibria involve a variety of strengths of case as well

⁴⁵ Caldeira, Wright, and Zorn, 15(3) J L, Econ, & Org 549 (cited in note 12).

as the presence of mixed-strategy equilibria (see the Web Appendix). Third, the discussion immediately above with regard to possible randomness of k_{SC} will contribute to dissents that don't garner cert grants. Thus, the linkage between a dissent and a cert grant will be weak in observable data, even if dissent has an important role. Finally, our model shows that dissents and cert grants (or denials) are really co-determined, so that use of dissents as an independent variable in a regression model predicting cert grants creates a specification error.

V. IMPLICATIONS OF CHANGES IN PARAMETERS ON INFORMATION REVELATION BY APPEALS COURT JUDGES

We now consider how changes in the parameters of the model influence the equilibria discussed in Section IV. We first provide the umbrella proposition and an associated tabular presentation of the comparative statics of the model. We then turn to analyze two changes in greater detail: 1) what happens to the reporting interval as k_{SC} is adjusted over its entire feasible range; and 2) what is the effect on the reporting interval as the justice-specific parameters are adjusted? The first analysis will lead us to observe how an increase in SC opportunity costs (e.g., via restriction of the cert budget) leads to the reporting of better "good bets" in the Sympathetic Push Equilibrium case and to closer "close calls" in the Unsympathetic Push Equilibrium case. In this sense, not only does SC use AC dissenters as screeners of cases, but SC can influence the "fineness" of the screening job. The second analysis will lead us to consider a countervailing effect: given the SC opportunity costs, how does a change in the ideologies of the justices (for example, because of new appointments to the court) potentially increase the reporting intervals of the judge? Here we will see that shifts of the justice-specific parameters in the direction of being more "majoritarian" increase the reporting intervals.

Comparative Statics. In Proposition 3 below, we summarize the comparative statics effects of the majority opinion z_M and the parameters u^B , u^{SB} , u^{SW} , u^W , k_{AC} , k_{SC} , α_i^P and α_i^R on the critical values x_m and x_i .⁴⁶ Details of the proof can be found in the Web Appendix.

Proposition 3.

- (a) The critical value x_m is an increasing function of u^{SW} and k_{AC} , and a decreasing function of z_M , u^B and u^W ; it is independent of u^{SB} , k_{SC} , α_i^P and α_i^R .

⁴⁶ Recall that, if one distinguished utility values for judge m from those of each justice, then part (a) below refers to judge m 's utility values while parts (b) and (c) below refer to justice i 's utility values, and these need not be the same.

- (b) If justice i is sympathetic, x_i is an increasing function of u^{SB} , u^{SW} and k_{SC} , and a decreasing function of z_M , u^B , u^W , α_i^P and α_i^R ; it is independent of k_{AC} .
- (c) If justice i is unsympathetic, x_i is a decreasing function of z_M , u^{SB} , u^{SW} and k_{SC} , and an increasing function of u^B , u^W , α_i^P and α_i^R ; it is independent of k_{AC} .

This proposition is illustrated in the following table, which also indicates the effect of a parameter increase on the reporting intervals for the push equilibria. Here a “+” means that an increase in the parameter increases the item in the column heading, a “-” means that an increase in the parameter decreases the item in the column heading, a “•” means there is no effect and a “?” means that the direction is uncertain. Finally, when i is a sympathetic justice the reporting interval depends upon the maximum of the two critical values (the lower end of the interval is $\max\{x_i, x_m\}$), so the effect of a parameter change on the reporting interval may depend upon which critical value is higher; this is indicated by the appropriate combination of +, - and •, with a “/” to indicate which variable in the column heading is being influenced.

Table 1. Effects of Parameters on Critical Values and Reporting Intervals

Parameter	Judge m	Sympathetic Justice i		Unsympathetic Justice i	
	x_m	x_i	$[\max\{x_i, x_m\}, 1]$	x_i	(x_m, x_i)
u^B	-	-	+	+	+
u^{SB}	•	+	-/•	-	-
u^{SW}	+	+	-	-	-
u^W	-	-	+	+	+
z_M	-	-	+	-	?
α_i^P	•	-	+/•	+	+
α_i^R	•	-	+/•	+	+
k_{AC}	+	•	•/-	•	-
k_{SC}	•	+	-/•	-	-

The Table indicates some interesting and systematic effects of the parameters on the critical values and the reporting intervals. For example, an increase in u^B or u^W decreases the critical value for judge m and a sympathetic justice, but increases the critical value for an unsympathetic justice. Hence, independent of whether justice i is sympathetic or unsympathetic, an increase in u^B or u^W increases the reporting interval. This, in turn, means that a larger set of z_m values will result in reasoned dissents (all else equal). Essentially, cases which

are viewed as being of greater precedential value will have larger reporting intervals.

Similarly, an increase in u^{SB} or u^{SW} increases a sympathetic justice's critical value, decreases an unsympathetic justice's critical value and, in the case of u^{SW} , increases judge m 's critical value (recall that V_m is not affected by u^{SB}). Thus, an increase in u^{SB} or u^{SW} results in a reduction in the reporting interval (except in the case of an increase in u^{SB} when $x_m > x_i$, and then the interval in the sympathetic case doesn't change; this is why the “-/•” shows up in the Table). Since u^{SB} and u^{SW} are associated with the decision to forego review and to let the AC decision stand without spreading it to the other jurisdictions, this result suggests that increases in either of these utilities results in less willingness to review the case in question, so that the associated reporting intervals are reduced. This, in turn, suggests that review will be less likely, since for any given density on the signals $h(\bullet, \bullet, \bullet)$, the probability of z_m being in the reporting interval will have decreased.

Finally, consider the effect of changes in $z_{M'}$ which is reported in the AC majority opinion. The direct effect, via affiliation, is that an increase in z_M (which, all else equal, would suggest a weaker case for M via-a-vis what SC is likely to do if they were to review the case) implies that m 's signal z_m is also likely to be higher. However, as can be seen from the Table, an increase in z_M reduces the relevant critical values for both the judge and the justice (independent of whether the justice is sympathetic or unsympathetic). In the case of a sympathetic justice, this unambiguously implies that the reporting interval increases in length: a greater range of cases will be promoted. In the case of an unsympathetic justice, however, the effect on the reporting interval is unclear. This is because both the top and the bottom ends of the interval are decreased, but it is not clear which falls by the greater amount.⁴⁷ However, it is true that the resulting Unsympathetic Push Equilibrium would involve reasoned opinions for lower z_m values and non-reasoned opinions for higher z_m values than before the increase in z_M .

The Effect of Changes in SC Opportunity Costs on Reporting Intervals. Table 1 shows that an increase in k_{SC} results in smaller reporting intervals (unless $x_m > x_i$, in which case there is no effect). This means that in the case of good bets, higher k_{SC} encourages reasoned dissents only when the bets are particularly good; in the case of close calls, higher k_{SC} reduces this interval, potentially eliminating the reporting of cases that would be close calls at SC .

⁴⁷ One can show that if $p(z_m, z_m)$ is homothetic in its arguments, then x_m decreases by less than x_i , and thus the reporting interval shrinks.

We illustrate this in more detail for the case involving Proposition 1 wherein the persuadable justice is sympathetic. Thus, we are interested in how changes in k_{SC} affect $x_i(k_{SC})$, where the latter term explicitly emphasizes the dependence of x_i on k_{SC} . In the Web Appendix we provide a detailed discussion of the derivation of the following figure which illustrates the effect of changes in k_{SC} on the reporting interval $[\max\{x_m, x_i(k_{SC3})\}, 1]$ and the type of equilibrium (i.e., Pull versus Sympathetic Push). To illustrate the full range of possible equilibrium behavior, we consider a justice who is (just barely) predisposed to grant cert when $k_{SC} = 0$, and is (just barely) predisposed to deny cert at a finite, but sufficiently large k_{SC} , denoted k_{SC3} . It can be shown that there exist critical values k_{SC1} and k_{SC2} , with $0 < k_{SC1} < k_{SC2} < k_{SC3}$, such that a pull equilibrium exists for k_{SC} between 0 and k_{SC1} and that a push equilibrium exists for k_{SC} between k_{SC1} and k_{SC3} .

Collecting these results yields Figure 5 (where $x_i(k_{SC})$ is, for simplicity, illustrated as a line). Notice that the transition occurring at k_{SC1} is quite dramatic. For costs slightly lower than k_{SC1} , judge m only writes non-reasoned opinions and does not promote any case for review, and the supreme court grants cert for all cases. For costs slightly higher than k_{SC1} judge m provides a reasoned dissent for all $z_m \in [x_m, 1]$; the reporting interval is the vertical distance above the curve $x_i(k_{SC})$. Moreover, pull and push equilibria may co-exist for k_{SC} between k_{SC1} and k_{SC3} (but a pull equilibrium must fail to exist for k_{SC} sufficiently

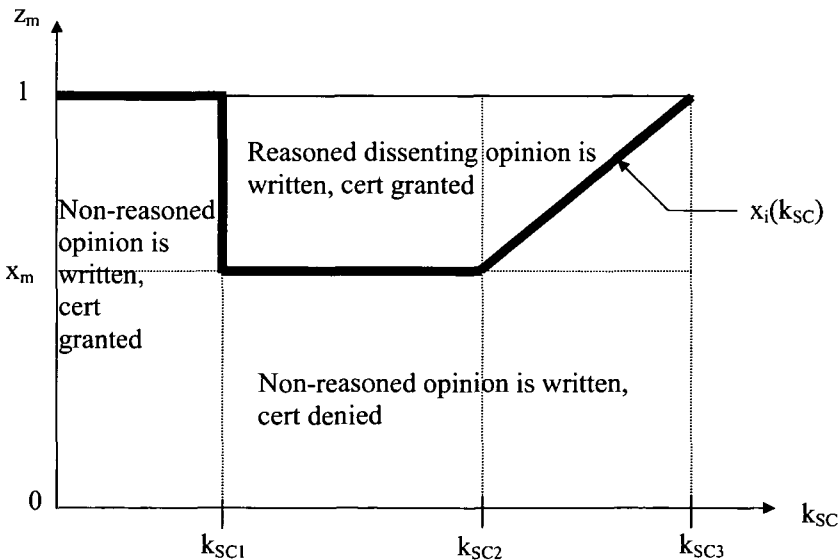


Figure 5. Equilibrium Outcomes as a Function of k_{SC}

close to k_{SC3}); we have illustrated the Sympathetic Push Equilibrium, since it is the most informative. When $k_{SC} < k_{SC2}$, the determining critical value for the reporting interval is x_m ; when $k_{SC} > k_{SC2}$, however, justice i 's critical value becomes the determining consideration, meaning that judge m 's reporting interval becomes progressively smaller for progressively larger values of k_{SC} . Thus, if we interpret k_{SC} as a policy lever for the supreme court (that is, it can "set" k_{SC} higher than its actual value), then the supreme court can employ restricted access to induce information revelation and effective screening on the part of judge m . A related figure is provided for the case of an unsympathetic justice in the Web Appendix.

The Effect of Changes in the Justice-Specific Assessments on Reporting Intervals. Using Table 1 we see that the effect of changes in either α_i^P or α_i^R is the same for the two reporting intervals: an increase in either parameter increases both reporting intervals (unless $x_m > x_i$, in which case there is no change). Since both parameters have the same effect, if it is desirable to encourage promotion of SC's review of good bets or close calls, then the set of promoted cases is larger when jurisprudential preferences are more majoritarian, that is, they lie closer to the upper-right corner of the box shown in Figure 2 earlier. This is because justices with α -values which are high, and thus are in the upper-right corner of the box in Figure 2, are better able to envision themselves on either side of the case (should it be heard) and are therefore more willing to entertain dissents. This feeds back to increase the incentive for judges to write reasoned dissents for good bets or close calls. Alternatively, the set of cases wherein there is a reasoned dissent is increased less (or even decreased) by shifts toward the jurisprudential extremes (that is, toward the upper-right or lower-left corners of the box in Figure 2).

VI. SUMMARY, IMPLICATIONS AND POTENTIAL EXTENSIONS

Summary and Implications. In the model presented above we integrate information, jurisprudence and strategic behavior to analyze the incentives for a dissenting judge on an appeals court to communicate privately-observed implications of the law (as related to the case at hand) to justices of a supreme court. The dissenter's intent is to promote a review of the case in the hope that the majority position on the appeals court will be reversed and a system-wide precedent will be established. By the same token, this means that the supreme court can use restricted access to capitalize on the desire of appeals courts judges to influence the evolution of the law, so as to help

screen cases for review. We focus on a dissenting judge and a given case, but as outlined in the Introduction, dissent by judges on an appeals court can come in other forms.

We characterize two general classes of equilibria. A Pull Equilibrium involves a dissenting judge writing a non-reasoned opinion and cert being granted; this equilibrium will disappear if the judicial opportunity cost for supreme court justices (k_{sc}) is high enough. A Push Equilibrium varies in detail from scenario to scenario, but involves cert being granted if and only if judge m writes a reasoned dissenting opinion. If the persuadable justices are sympathetic, then the push equilibrium sub-interval for writing a reasoned opinion is of the form $[x, 1]$, where x depends upon the characteristics of the dissenting judge and the sympathetic and persuadable justices.⁴⁸ In this sense, SC harnesses the dissenters at AC to signal "good bets" for reversal.

When the supreme court's persuadable justices are unsympathetic, the push equilibrium sub-interval for writing a reasoned opinion is interior to $[0, 1]$. This means that if the dissenting judge's private information is in the equilibrium interval for writing reasoned opinions, then he is purposely communicating with justices, some of whose jurisprudential leanings are likely to be quite different from his, and those justices are voting for cert, thereby furthering the interests of a judge with whom they may (ultimately) disagree about the policy issue in question. They both find mutual advantage in this equilibrium. This is not because of errors (e.g., excessive optimism) on one or both of their parts; rather, it reflects the differences in payoffs each receives. This case presents the interesting feature which we refer to as "strange bedfellows," and now when the minority judge writes a reasoned opinion, it is to push "close calls." Intuitively, the equilibrium reporting interval suggests posterior probabilities that the supreme court will reverse the appeals court which are not so high as to make any pivotal unsympathetic justice wish to deny cert, but not so low as to make the dissenting judge choose the option of providing only a non-reasoned opinion. In this sense, SC harnesses dissenters at AC to signal cases which are likely to be close calls if reviewed by SC. As we showed, this equilibrium is a consequence of recognizing that judges and justices care not only for "getting it right" (i.e., error correction), but also for influencing the breadth of application of their decisions. This second attribute, the range of influence of an agent with respect to the size of the hierarchy, works to encourage conditions under which dissenters will try to influence

⁴⁸ Recall that the formal model assumed a three-justice supreme court. The U.S. Supreme Court is comprised of nine justices, four of whom have to be persuaded to grant cert. Thus, our persuadable justice is equivalent to the formation of a coalition of (at least) four justices who are persuaded to grant cert.

the agenda of those engaged in higher-court review, even if the judge and some justices hold somewhat conflicting jurisprudential perspectives. Note, however, that if these jurisprudential perspectives are sufficiently conflicting, the judge will have no incentive to write a reasoned opinion, as shown in Figure 4(b).

The supreme court's opportunity cost parameter, k_{SC} , plays a central role. We conceive of this exogenous parameter as reflecting the tightness of the cert budget: substantial decreases in the average number of petitions for certiorari that were granted (as occurred from the 1970's into the 1990's) are presumed to imply increased levels of k_{SC} .⁴⁹ Increases in this cost eventually mean that only push equilibria will exist. This means that promotion (by a judge) of the "right sort of case" becomes necessary for cert to be granted: judges act as screeners of the cases most likely to be of interest to justices. We further indicated (see Section IV) how uncertainty on the part of judge m as to the correct level of SC's opportunity cost can lead to equilibria wherein reasoned dissents are written but cert is denied. We also considered the implications of small adjustments in the assessments of a justice's jurisprudential and coalition-joining preferences (the α_i^P or α_i^R parameters). We showed that if it is desirable to encourage promotion of SC's review of good bets or close calls, then the set of promoted cases is increased by shifts of jurisprudential preferences in a majoritarian direction and may be decreased by shifts towards jurisprudential extremes. Finally, we indicated how our theoretical results have implications for the strength of empirical tests of the role of dissents in influencing the likelihood of a grant of cert; we explained why this inference is likely to be weak, as has been found in the existing empirical literature.

Potential Extensions. We raise two potential extensions. First, the current model allows for one dissenting judge from one appeals court. In the analysis, k_{SC} represents both direct effort (hearing, negotiating and deciding efforts) and the opportunity foregone of taking some other case via which a justice could pursue her perspective about how the law should evolve. One extension would be to allow for competing dissents from multiple ACs, thereby endogenizing the opportunity-cost portion of k_{SC} . We speculate that competition among ACs is likely to further refine (and reduce) the set of cases that judges promote to the court for consideration. Alternatively put, extending our analysis to allow dissents from multiple ACs would develop a notion

⁴⁹ An alternative explanation for the decline is a principal-agent problem associated with the operation of the "cert pool" (see note 27): clerks are risk averse and under-recommend cases for further consideration. Of course, from our perspective, justices anticipate this reaction and design the rules and rewards to induce this outcome.

of a "demand for cert," one that reflects the competition of possible vehicles for the justices to use to affect the law.

A second extension of the analysis in this paper would be to understand the "supply of cert" that comes from a supreme court, a supply that is organized quite differently than occurs in the economist's usual notion of supply. This difference arises because it takes joint action by a subset of justices (generally, at least four on the real Supreme Court) to allocate a space within the cert budget to a specific case; thus, property rights are effected by subsets of agents, not individual agents. Note that this would require careful explicit modeling of the coalition formation process. In addition, there seems to be the longer-run budget-sizing question. Given the great volume of cases, it seems reasonable that some decision process has been employed to control how the resource (hearing and decision-making at the supreme court) is to be allocated. We have referred to this as the "cert budget," which may be a somewhat soft constraint, but seems to be increasingly subject to guidance and control, since earlier decades involved substantially more cases being granted cert. Thus, this extension involves modeling how a supreme court chooses its cert budget and the rules by which subsets of justices can allocate it.

Finally, this paper has examined how a particular "weak hierarchy" (wherein a higher court needs information from a lower court, but can neither directly reward nor discipline lower-level judges) creates incentives for information revelation. Other such organizational structures come to mind (e.g., a faculty committee reporting to a faculty, or a committee reporting to a legislative body, might have dissenting members), though our model will require some modification to faithfully represent these settings; these remain topics for future research.