

Minority Will? A Model of Influential Dissenting Opinions*

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July 31, 2023

Abstract

We study the incentives for writing dissenting opinions that try to shape the law. We model the interaction between a minority and majority in a collegial court setting. Dissenting judges calculate how much effort to put into a dissenting opinion with an expectation that their work can probabilistically affect how the law is applied in the future. That calculus can influence how a majority opinion author writes an opinion and the dynamics of collegial decision-making and coalition formation. We evaluate comparative statics about the content of opinions and the conditions under which dissenting opinions should emerge from collective choice. The results help rationalize both differences in dissenting behavior across levels of the judicial hierarchy and how separate opinion-writing shapes the extremity of judicial opinions.

*We thank Deborah Beim, Maggie Penn, John Patty for helpful comments and advice.

1 Introduction

Political scientists have expended a significant amount of effort to understand the logic and consequences of one very particular feature of judicial decision-making—opinion-writing.¹ Indeed, the defining cleavage in the study of judicial decision-making is about the extent to which written opinions matter. Bucking traditional legal-academic and political-science approaches to the law, a long-dominant school of thought argued that opinions are mere window-dressing, little more than *ex post* rationalizations of the decisions judges had already decided to make. At the same time, judges undertake significant effort crafting their opinions, with that work occupying a meaningful portion of their time. Hence the interest among scholars—why do judges engage in such costly, burdensome work if their opinions have little consequence?²

The rise of judicial behaviorism in the early-20th century was directly linked to “legal realism”, which stood for the view that law is little more than a forecast of what a judge will do. From that perspective, opinions might be useful insofar as they can predict how a judge will decide a future case, but they do not constitute some sort of neutral, dispassionate, or binding statement of the law. Contemporary work on judicial behavior, which focuses overwhelmingly on judicial votes rather than the content of judicial opinions, represents the culmination of that philosophy of legal decision-making. At the same time, scholars over the past few decades have returned to opinions as a seemingly promising avenue for understanding the role courts play in governance and democracy.

That research has been both theoretic and empiric in nature. From a theoretical perspective, scholars have sought to model the structure of legal rules as components of judicial decisions. An over-arching question is: what is the law that an opinion establishes? From an empirical perspective, scholars have examined the determinants and process of opinion-writing. Related research also leverages the content of judicial opinions to map the political space in which judges operate. Fundamentally, all of this work is driven by a desire to understand what judicial opinions can tell us about what judges think and how they will decide future cases.

One of the major challenges facing this literature is the role of dissenting opinions. From a

¹We focus our analytic attention on common-law settings, where opinion-writing is a central component of the judicial process.

²The upstream question of why only some courts have an institutional mechanism for dissent is beyond the scope of this article. However, it is worth noting there is a range of variation: some courts permit dissents only in certain kinds of cases, others proscribe dissents altogether, while still others, like the pre-Marshall US Supreme Court and many of the pre-19th-century English courts, announce their opinions *seriatim* (Henderson 2007, Lewis et al. 2016).

theoretical perspective, it is unclear how to incorporate them into a model of legal rules—what role do they play, and how do they affect the incentives facing judges writing opinions? From an empirical perspective, it is unclear what role dissenting opinions play in the prediction of judicial votes or how we ought to understand the preferences of judges in the presence of a dissenting opinion.

We develop a formal model of bargaining on a collegial court that focuses on the role dissenting opinions play in the content of the court’s output. The key to our model is an assumption that future applications of court doctrine—for example, how lower courts understand the law—can be influenced by dissenting opinions. Anticipating probabilistic attention to dissenting opinions, the majority and minority work together to strategically influence the aggregate understanding of the law that emerges from the combination of both opinions. In our analysis, we consider first bargaining in the context of an exogenous rate of attention to dissenting opinions, due potentially to ideological alignment among judges in lower courts. We then consider a setting in which dissenting judges can influence the rate at which lower court judges pay attention to their decisions through the quality of their opinions. Our analysis results in predictions about not just the conditions under which a judge will be willing to invest effort into writing a dissenting opinion but also the effects those opinions can have on the content of majority opinions themselves.

The paper proceeds as follows. In the next section, we describe the puzzling logic of dissenting opinions and the challenges extant scholarship has faced in trying to capture the incentives behind and consequences of dissenting opinions. In Section 3, we propose a model of collegial opinion-writing in which dissenting opinions have some degree of influence on the law. In Section 4, we extend the model by allowing a dissenting judge to endogenously affect the influence of her opinion through the effort she invests into its quality. Section 5 discusses the broader implications—both theoretical and empirical—of the analysis, and Section 6 concludes.

2 The Logic of Dissents

To the extent judicial opinions constitute authoritative statements of the law, the inclusion of a dissenting opinion in a court decision is a curious practice. It is particularly so given the authority of the court’s decision derives from the assent of a majority of the members of the court. To the

extent that the law is most effective as an institution when it provides predictability and clarity, dissents seem to even further undermine the value of written judicial decisions. Indeed, this was at least part of the logic for why the US Supreme Court abandoned the use of seriatim opinions—the process whereby each justice wrote his own opinion—in the early 19th century (e.g., Henderson 2007).

Despite these important concerns, many collegial courts feature frequent dissenting. At the US Supreme Court, justices in the voting minority often offer critiques of the majority decision, identify gaps in the logic, suggest limitations to the ruling, and invite or encourage future litigation (or, legislation). Indeed, dissents are written for a variety of reasons (Brennan Jr. 1985, 431). We focus on one particular motivation that goes to the heart of a dissenting opinion’s perhaps most consequential function. What are the consequences of written dissents that, at least in part, set up competing statements of the law (e.g., the contours or limits of a majority opinion)? Typically, models of bargaining and opinion-writing predict few dissents—if any (e.g., Lax and Cameron 2007, Parameswaran, Cameron and Kornhauser 2021). That feature of the theoretic literature is driven by a focus on bargaining and coalition formation, and from that perspective a dissent (i.e., losing bid) serves no function beyond imposing resource costs on the (losing) bid for a majority. In our model, however, we focus on the role dissents play in shaping future applications of the law. Taking that incentive into account more richly describes the full range of dissents in judicial hierarchy and expands our understanding of critical information flows in hierarchical doctrine formation.

2.1 Why do dissents matter?

Although scholars have long recognized the importance of dissent (Peterson 1981), the literature’s understanding of the reasons for this importance have, over time, expanded.³ This work aims to continue this expansion here. One particularly relevant form of dissent to this project is dissent that sends signals from lower courts to the high court. Of these signals, there are two main types: noncompliance and case importance. Whistleblowing dissents (e.g., Beim, Hirsch and Kastellec 2014, 2016, Beim and Kastellec 2014, Cross and Tiller 1997, Daughety and Reinganum 2006, Kastellec 2007, 2011) are dissents by lower court judges that send signals to the higher court of

³Types of consequential dissent beyond the scope of this paper include, but are not limited to, demosprudential (Guinier 2008), redemptive (Primus 1998), and deliberative (Stack 1995) dissent.

lower court noncompliance with high court policies. These signals aid the high court in ensuring its policies are followed faithfully by the lower courts, which are charged with policy implementation. At least one model of dissent, however, shows how relatively sophisticated litigants can replace lower court dissents as the optimal channel of noncompliance signals (Strayhorn 2019). Nevertheless, that model still elucidates an important role for dissent in case selection: signalling case importance. Given (1) the vast difference between the volume of cases heard by the US Supreme Court and that heard by the Circuit Courts of Appeals and (2) the former’s overwhelmingly discretionary docket, signals about case importance are of high value to a resource-constrained Supreme Court faced with sifting through thousands of petitions for discretionary review for the less than one percent it will grant.

While critical to understanding the role of dissent in judicial hierarchy, both signals of non-compliance and case importance are roles reserved largely for *lower* court judges (usually Circuit judges). In focusing on these two roles for dissent, the literature largely neglects the role of dissent on courts of last resort (i.e., high courts). For example, in exploring the various incentives to dissent that the literature has examples, such as caseload, opinion length, and dissents, Epstein, Landes and Posner (2011) stops short of exploring the particular role dissents play in the judicial hierarchy. Picking up from there is where this paper proceeds. We examine the role of dissent at a high court situated atop a judicial hierarchy. This setting provides a unique set of incentives, shifting our attention from signals that emanate up the judicial hierarchy to those doing so down the same.

One manifestation of this phenomenon is a dissenter highlighting the limits of a majority’s reasoning. Two Establishment Clause cases *Abington v. Schempp*⁴ and *Engel v. Vitale*⁵ exhibit just that. There, the Court found Pennsylvania school Bible reading and New York school prayer regimes violated the First Amendment. In each, there was a lone dissenter: Justice Stewart. He argued efforts to avoid Establishment Clause violations in the name of neutrality are impermissible if they “disadvantage” religion⁶ and that the clause’s purpose was to avoid the coercive nature of an established church. Litigants and *amici* picked up these neutrality-as-disadvantage and coercion arguments and brought them back into court. Advancing this framing by both citation and argumentation, they eventually secured victories in religious display and school funding cases—as

⁴374 U.S. 203, 308 (1963).

⁵370 U.S. 421, 444 (1962).

⁶*Schempp*, 374 U.S. at 313.

well as beginning to prevail even in school prayer cases. From sole dissenter, to litigants and *amici*, and back to judges, this example illustrates how even one apex court member’s signal down the hierarchy and outside of the courts can redound to his policy benefit.

We know some appellate judges view their dissents in this way because they have said so themselves. Appellate judges themselves have also long espoused the belief dissents are multifaceted tools (see e.g., Altimari 1993, Brennan Jr. 1985, Lipez 2005, Wood 2012). Most notably, former Supreme Court Justice William Brennan identified, among others, the exact role of dissent with which this paper concerns itself: signals to lower courts from high court dissents. “A dissent is sometimes designed,” he explained, “to furnish litigants and lower courts with practical guidance—such as ways of distinguishing subsequent cases.” Dubbing one form of this style of dissent “damage control,” Brennan went on to explain “dissent is also commonly used to emphasize the limits of a majority decision that sweeps, so far as the dissenters are concerned, unnecessarily broadly—a sort of ‘damage control’ mechanism” (Brennan Jr. 1985, 430). He is not alone. Circuit Judges have since echoed dissent’s distinguishing role (see, e.g., Altimari 1993, Lipez 2005, Wood 2012). Such a dissent can “show why a seemingly broad majority opinion ought to be viewed in a much narrower light” (Wood 2012, 1455), further “clarify and define the majority’s holding” (Altimari 1993, 284), or even “erode the authority of the majority opinion” (Lipez 2005, 323). The audience for these signals is not, of course, only lower court judges but also those who present arguments to them—litigants and attorneys: “By outlining what the law is not, dissents clarify what the law is and, in doing so, can provide a signpost to lawyers in subsequent cases when confronted with factual circumstances that may be distinguishable using the dissent as a springboard” (Altimari 1993, 284). Of course, by the same token dissenting opinions can potentially undermine the clarity and consistency of the law.⁷ If lower court judges look to dissenting opinions to anticipate changes in the law, opportunities to evade reversal, or other means of shirking control by higher courts, then dissenting opinions can exacerbate the challenges higher courts face in ensuring their decisions are faithfully applied (e.g., Westerland et al. 2010). What is more, to the extent that the judicial hierarchy is organized so as to minimize authoritative statements of the law and promote efficient communication of doctrine

⁷The Court itself sometimes takes up a rule espoused by a previous case’s dissent. One of the most notable examples of this is when the Court adopted the undue burden standard in *Casey* after Justice O’Connor’s *Akron* dissent suggested the Court do so nine years (and four retirements) earlier. Though this is a bit different than signalling to lower courts (our focus here), it is a somewhat similar phenomenon: dissent impacting future policy.

to lower courts, adding additional viewpoints from the top can undermine that logic as well (e.g., Kornhauser 1994).

2.2 Why models rarely predict dissent

Two of the leading US Supreme Court bargaining models rarely (if ever) predict dissent. At least one predicts minimal dissents that are only ever joined by extreme justices sufficiently far away from the dispositional majority so as to prefer voting “correctly” over the ability to minimize losses by joining the dispositional majority and bargaining from within (Parameswaran, Cameron and Kornhauser 2021, 4). Even there, Parameswaran, Cameron and Kornhauser (2021) conceive of dissents as an exclusively expressive practice in which dissenters’ utility comes not from influencing policy but rather from voting sincerely (4). Recognizing the prevalence of dissent at the Court, Parameswaran, Cameron and Kornhauser (2021, 13) chalk this frequent practice up to expressive motives in their model and note the “many complexities” of modeling dissent as a consequentialist endeavor. Another bargaining model leaves out dissent altogether due to lower disutility flowing only from gaining the median justice’s vote in the case at bar (Lax and Cameron 2007).

The literature’s paucity in predicted dissent is due to these models’ focus on disutility from the policy outcome in the instant case alone. Whether a purely expressive endeavor or a futile exercise without the median’s vote, the existing literature characterizes dissenting as having no direct effect on policy. This is where we differ. By instead contextualizing Supreme Court opinions in the judicial hierarchy in which lower courts implement under novel facts the policies crafted and announced by the high court, incentives arise for dissenters to spend costly resources on affecting lower court implementation even after losing on the instant case’s disposition. In short, dissent can, in fact, influence policy if we consider how judicial policy is implemented. These previous bargaining models answered the call to “take law seriously” (Friedman 2006) by recognizing and incorporating the importance of legal rules (not merely case dispositions). This model aims to continue that work by further incorporating another feature of the law: signals down the hierarchy about guidance for cases with novel facts.

2.3 How to model dissent incentives

A missing piece in the dissent literature goes beyond bargaining and even signals from lower courts to the higher one: high court dissenters can signal to lower court judges as well. Because every answered legal question begets another to answer (e.g., Beim, Clark and Patty 2017), a high court dissenter need not throw in the towel on an entire legal issue when finding herself on the losing side of a particular case’s disposition. Nor must a dissenter only reap expressive utility when bargaining from within the dispositional majority offers insufficient policy utility. Rather, a justice can use the structure of the judicial hierarchy to still obtain consequential policy utility even in dissent. By recognizing the lower courts’ task of implementing the higher court’s policy on facts different than the ones at issue in the instant case and crafting her dissent accordingly, a dissenter can invest resources to convince a lower court her dissent is worth considering when applying the higher court’s rule to novel facts. Thus, leveraging the ability to send signals down the judicial hierarchy allows dissenters to extract policy utility where other models predict only expressive utility. The ability of lower courts to “materially modify the High Court’s determinations” by “working in its interstices” is anything but a novel idea—it has been around for decades (Murphy 1959, 1018). Removing bargaining models from their silo to place them in conversation with the hierarchy literature is, however, one of this work’s contributions.

Taking seriously the ability of High Court dissenters to engage in this interstitial implementation signalling to the lower courts creates a tension between the the limited resources of dissenting justices and their desire to move policies closer to their ideal points (in both policy and quality spaces (Lax and Cameron 2007)) in future cases, including—and especially—in lower court cases. This tension is at the heart of our model. The source of this signalling ability (whether it be exogenous or endogenous) motivates the versions of the below model that build off its baseline.

3 The Baseline Model

In this section, we introduce a baseline model in which a collegial court collectively decides a case and issues one or more opinions. Our model builds directly from Lax and Cameron (2007). The key feature in this model is that future applications of judicial precedent are determined not just by the majority opinion but also the dissent, should one be written. We begin in this model

by simplifying that process, by assuming the influence a dissenting opinion has is exogenous to the model. Substantively, this feature might correspond to any number of systemic characteristics that capture attention to the minority faction on the court. For example, lower court judges anticipating changes in the law, ideological misalignment across levels of the judicial hierarchy, or clever politicians or litigators might all find ways to argue a dissenting opinion is relevant for their understanding of the law. In the next section, we relax this assumption and allow a dissent’s influence to be determined by the content of the opinion itself. However, the baseline model first provides novel insights into the bargaining process from which we can build.

3.1 Primitives

Players and sequence of play. There are three players, $i \in \{L, M, R\}$, with ideal points $j_i \in \mathbb{R}$ and where we assume $j_L < j_M = 0 < j_R$. We assume, without loss of generality, that j_R is the majority opinion author, which means she makes an initial opinion offer, which is a pair denoted $o_R = \langle p_R, q_R \rangle$. We assume that $p_i \in [-1, 1]$ and $q_i \in [0, 1]$, $\forall i$. Let p_R denote the policy content of the opinion, and q_R denote the quality of the opinion. We adopt Lax and Cameron (2007)’s use “quality” as a term to capture the bundle of opinion characteristics that promote its implementation (281–82). Given this substantive interpretation and the function of q in our model, we particularly focus on quality as a tool to decrease ambiguity, highlighting its instrumentality in securing policy outcomes. Next, j_L can propose a dissenting opinion, $o_L = \langle p_L, q_L \rangle$, where the elements of o_L similarly correspond to policy and quality. Alternatively, she may opt to simply join the opinion proposed by j_R . In that case, we denote $o_L = \emptyset$. Finally, j_M chooses to endorse an opinion or write separately, $o_M \in \{o_R, o_L\} \cup ([-1, 1] \times [0, 1])$. If she endorses an opinion, that opinion becomes the Opinion of the Court. If she writes separately, the result is a fractured decision with no Opinion of the Court. The game ends, and payoffs are realized. A strategy for j_R is given by $o_R : \langle p_R, q_R \rangle \in [-1, 1] \times [0, 1]$. A strategy for j_L is a mapping from j_R ’s opinion to j_L ’s opinion space, given by $o_L : [-1, 1] \times [0, 1] \rightarrow \emptyset \cup ([-1, 1] \times [0, 1])$. A strategy for j_M is a mapping from j_R ’s and j_L ’s opinions to j_M ’s endorsement space, given by $o_M : [-1, 1] \times [0, 1] \times \emptyset \cup [-1, 1] \times [0, 1] \rightarrow [-1, 1] \times [0, 1]$.

Opinions. Similarly to Lax and Cameron (2007), we assume that opinions produce outcomes when applied by future actors, such as lower court judges, bureaucrats, etc. The outcomes produced

as a result of a given case are a function of opinion policy content and quality. Specifically, we follow Lax and Cameron in adopting a mean-variance framework, such that the policy content of an opinion identifies the expected outcome from applying the opinion, and the quality measures the (inverse) variance. Conceptually, opinion outcomes can be thought of as draws from a probability distribution defined by the opinion. As Lax and Cameron, we assume that opinions produce Normally-distributed outcomes, such that the result of applying an opinion is given by $x_{o_j} \sim \mathcal{N}(p_j, 1 - q_j)$.

We depart from Lax and Cameron in that we assume dissenting opinions can probabilistically affect outcomes. In particular, we assume that the dissenting opinion determines future outcomes. In the baseline model, this probability, $\pi \in (0, \frac{1}{2})$, is an **exogenous parameter**. In the next section, we relax this assumption to allow the dissenting opinion itself to endogenously affect the probability that it influences future outcomes. Substantively, we refer to π as the **degree of minority influence**.

Preferences. We assume the justices have preferences over outcomes and effort. In particular, for a given opinion, $o = \langle p, q \rangle$, justice i receives utility $-(j_i - p)^2 - (1 - q)$. In the event a dissenting opinion, o_L , is written, the justice receives utility from each opinion, with the dissenting opinion weighted by $\pi(o_L)$ and the majority opinion weighted by $(1 - \pi(o_L))$. In the event of a fractured decision (i.e., j_M writes separately), we assume each justice's policy outcomes simply reduce to a (common) disutility, $-\kappa$. Finally, any justice, i , who writes an opinion with quality q_i pays a cost $c(q_i) = c \cdot q_i^2$, with $c \geq 1$. For simplicity, we assume the opinion the median produces in the event she does not endorse an opinion comes at zero cost; the κ parameter captures all costs associated with forcing a fractured decision.

Information. This is a game of complete and perfect information. We assume that the justices' know each others preferences and can perfectly anticipate their choices (in particular, the opinions they will write). In the context of a collegial court, such as the Supreme Court, this is a reasonable approximation of how the Court operates. For example, studies of bargaining have documented the iterative nature by which opinions are circulated among the justices through the drafting and publication process (e.g., Epstein and Knight 1997, Maltzman, Spriggs and Wahlbeck 2000).

Indeed, the history and study of Supreme Court opinion-writing is littered with examples of justices strategically anticipating counter-arguments from dissenting opinions. The result is that written opinions are never a surprise because all information is shared in time to adjust one’s own strategy (i.e., opinion) in response to the other’s choices (c.f., Clark, Montagnes and Spenkuch 2022).

3.2 Analysis

To analyze the model, we first consider the incentive a judge faces to write a dissenting opinion. We then turn to equilibrium behavior.

3.2.1 The incentive to dissent

A salient feature of the model developed by Lax and Cameron (2007) is that dissenting opinions with positive quality are not written in equilibrium. The logic behind that result is that because the median’s vote determines outcomes, by virtue of the power to decide which opinion is the majority opinion, the majority is always better off investing in quality or making enough policy concessions to remain the majority. The dissenting judge therefore never has an incentive to engage in costly opinion writing. In contrast, in our model dissenting opinions can affect outcomes by potentially influencing how the law is applied, and the degree of influence is endogenous to the opinion itself. This gives rise to the possibility that j_L might be willing to engage in costly opinion writing, *even knowing she will never win the median’s vote*. To see what must be necessary, consider j_L ’s utility, given a majority opinion from j_R , assuming the median endorses j_R ’s opinion,

$$U_L(o_L|o_R, o_M = o_R) = \pi \cdot (-(j_L - p_L)^2 - (1 - q_L)) + (1 - \pi) \cdot (-(j_L - p_R)^2 - (1 - q_R)) - c(q_L). \quad (1)$$

If the median does not join an opinion, then utility is simply given by $U_L = \kappa$. By contrast, if j_L refrains from dissenting, her utility is given by

$$U_L(\emptyset|o_R) = -(j_L - p_{R'})^2 - (1 - q_{R'}), \quad (2)$$

where R' denotes the opinion that j_R would write in the absence of a dissenting opinion. (Note, because we have not yet characterized equilibrium opinions, we do not know how j_R ’s strategy

changes when j_L is willing to write a dissenting opinion.

Thus, assuming the median will endorse j_R 's opinion, j_L is willing to write a dissenting opinion, given o_R and $o_{R'}$ whenever

$$j_L < \overline{j_L}(o_R, o_{R'}). \quad (3)$$

We provide an analytic expression for $\overline{j_L}$ in the appendix, but a few observations provide useful intuition. First, $\overline{j_L}$ is increasing in $p_{R'}$ but decreasing in p_R . Intuitively, this means that for a given majority opinion o_R , as the majority opinion written in the absence of a dissent gets “worse” from the dissenting justice’s perspective, more moderate justices will be willing to write a dissenting opinion (to stave off the adverse opinion). The contrary logic applies to the reverse consideration.

Remark 1 *The policy content of the majority opinions produced in the presence and absence of a dissenting opinion affect the range of potential dissenting justices willing to write a dissent.*

A second feature that emerges from this analysis is that as a minority judge becomes more extreme (as j_L decreases), she will be weakly more likely to want to write a dissenting opinion. The logic is straight-forward—a judge can dilute the effects of the majority opinion by simply issuing a dissenting opinion, and so the net utility of doing so increases as the majority opinion becomes “worse” from her perspective. Below, we show that relaxing the exogeneity of π (the parameter capturing the dissent’s influence) alters this result in substantively important ways.

3.2.2 Equilibrium

Having considered the incentive to write a dissenting opinion, we turn now to equilibrium behavior. The primary question on which we focus is: under what conditions will a judge be willing to bear the cost of writing a dissenting opinion in equilibrium? The core tension that underlies the logic of the equilibrium we consider involves the majority opinion-writer’s incentive to deter a dissent. As we show, equilibrium dissents occur only when the majority opinion-writer prefers to accept the influence of a dissent rather than concede enough in her own opinion to deter the dissent in the first instance.

In particular, there an important preliminary result follows from the structure of the game itself. A minority justice, by virtue of the sequence of play, cannot credibly commit to not publishing a

dissenting opinion.

Remark 2 *The minority justice cannot credibly commit to refraining from a dissenting opinion.*

The very real threat of a dissent influences the majority opinion-writer’s calculus about how best to write her opinion. For example, if the majority opinion-writer were to draft the same opinion as the dissenting justice would write, there would be no reason to write a dissent—the result would be the same, and the minority justice would only incur the cost. This logic helps illuminate how an equilibrium can be constructed. Consider two types of equilibria that might exist—one in which a dissent is written and one in which a dissent is not written. For the latter, the majority justice needs to satisfy two conditions. First, the majority opinion writer must write an opinion that the minority justice prefers to “accept” rather than counter with her own dissent. Second, the majority opinion writer must write an opinion that the median prefers to accept rather than write separately. If the set of opinions that meet those two conditions is non-empty, then an equilibrium can exist only if the majority judge prefers one such opinion to simply writing her own ideal opinion and forcing a plurality.

Now, consider the second type of potential equilibrium—one in which a dissent is written. A similar set of constraints exist, but in this case there must be a pair of opinions—dissenting and majority—that all three judges prefer to coordinate on, subject to their mixing according to π , rather than accepting a plurality decision. In this kind of equilibrium, the minority judge will write the optimal dissent from her perspective, given the majority opinion. The majority opinion will be the optimal opinion from the majority’s perspective that simultaneously makes the median at least indifferent to accepting the majority opinion, given the dissenting opinion being written. This kind of equilibrium can exist for a sufficiently small degree of minority influence, π .

Proposition 1 *Given a sufficiently small π , there exists a subgame perfect Nash equilibrium in which j_R writes a majority opinion, o_R^* , j_M joins o_R^* , and j_L writes a dissenting opinion, o_L^* . The dissenting opinion is located at j_L ’s ideal point and has quality $q_L^* = \frac{\pi}{2c}$. The majority opinion’s location and quality are both increasing in j_R and make the median exactly indifferent between joining the majority and writing a plurality opinion.*

The logic of the equilibrium characterized in Proposition 1 is that for a given degree of influence a dissenting opinion can have (i.e., π), a the set of majority justices who will be willing to invest the effort to produce an opinion that will attract the median’s vote must satisfy two constraints. We

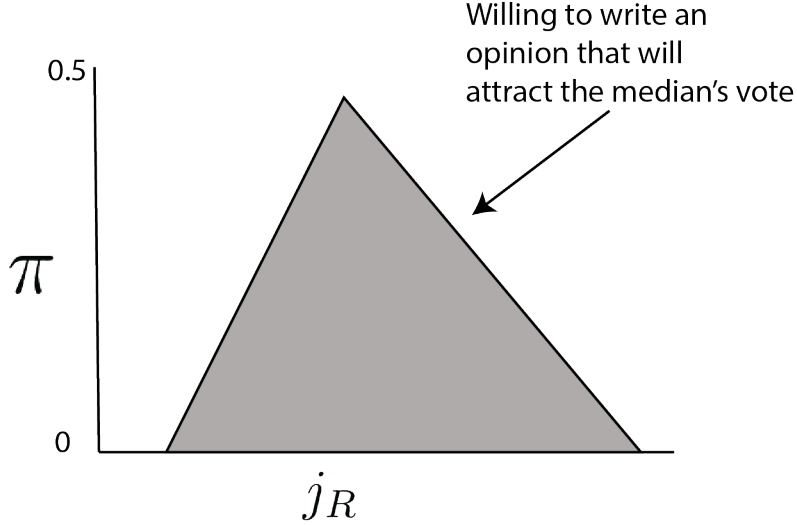


Figure 1: Region of parameter space that supports equilibrium with dissenting opinion.

summarize the result in Figure 1. It must be the case that the majority justice does not perceive the cost of a plurality opinion to be too bad, and it must be the case that the majority justice does not find it too onerous to sign onto the opinion that will hold the majority together. Because of the former, the most moderate justices will not be willing to produce a majority opinion—they do not gain enough from the effort required to hold the majority together. Because of the latter, the most extreme majority justices will not be willing to produce a majority opinion—they have to concede too much in the opinion and simply prefer to accept a plurality.

Indeed, the full equilibrium space can be characterized with three types of behavior. We may observe either (i) majority opinions in conjunction with dissenting opinions, (ii) plurality decisions with no majority, or (iii) unanimous decisions in which the minority suppresses its dissent and joins the majority. Proposition 1 characterizes equilibrium behavior for (i). The other two types of equilibrium behavior depend on the costs of plurality and quality, relative to the alignment of the justices' ideological preferences. If the costs of plurality are low, relative to the degree of ideological disagreement, then it will not be possible to find an opinion that two justices can agree on. This will result in plurality outcomes. At the same time, if the cost of quality is too high, relative to ideological disagreements, then the minority justice will prefer to suppress her dissent and join the majority opinion. This latter condition is complex, because the consequences of joining the majority opinion are not just to save the cost of dissent but also entail foregoing the potential influence of the dissent on legal interpretation.

Proposition 2 *There exist three kinds of behavior in equilibrium. Provided sufficiently large κ relative to c , the majority justice will write an opinion that attracts the median’s vote and results in a dissent with positive quality. For sufficiently small κ , the median will refuse to join a majority opinion, and the justices will produce a plurality decision. For sufficiently large c relative to π , the minority will suppress its dissent and join a majority opinion.*

Proposition 2 is important for two reasons. First, it establishes a baseline against which we can later compare a model extension. Indeed, as we see in the next section, allowing a dissent’s influence to depend on its quality changes the variety of behavior we observe in equilibrium in instructive ways. Second, the proposition demonstrates that the model is capable of capturing a variety of distinct outcomes that are empirically observed and relevant to understanding the politics of collegial decision-making in the courts. In particular, scholars have widely documented the phenomenon of suppressed dissents, especially at lower courts but have also struggled to explain why judges engage in seemingly costly effort to write dissenting opinions when they do. Further, we also observe situations in which the court fractures, and no opinion can be produced by a majority. Proposition 2 captures all three types of behavior.

3.2.3 Comparative Statics

Having established the variety of behavior that can be supported in equilibrium, we return to Remark 1, which established that the possibility of a dissent affects the content of a majority opinion. We are now prepared to evaluate precisely how the incentive to dissent shapes majority opinion characteristics.

Majority opinion author. We begin by evaluating how the identity of the majority opinion author affects equilibrium outcomes. In either equilibrium in which the majority opinion author produces a majority opinion (i.e., equilibrium outcomes with either a suppressed or published dissent), as the majority opinion author becomes more extreme (i.e., as j_R increases), the equilibrium majority opinion becomes more extreme and of higher quality. The intuition here is straightforward—more extreme justices prefer to invest more in quality in order to achieve more extreme opinions; the investment in quality is offset by both the gain in policy outcomes from the majority opinion itself and its probabilistic mixing with the minority opinion. This result parallels the core finding in Lax and Cameron (2007).

At the same time, the identity of the majority opinion author does not affect the dissenting opinion. Recall, in equilibrium, the dissenting opinion is simply an opinion written at the dissenting justice's ideal point, with quality determined only by π and c —the dissenting opinion's influence and the marginal cost of investing in quality.

Thus, in equilibrium, the effect of an increasingly extreme majority opinion author is to yield a more extreme, higher quality majority opinion, while the dissenting opinion remains constant.

Potential dissenting opinion author. Consider next the potential dissenting opinion author. As the potential dissenting author becomes more moderate, her opinion also becomes more moderate—recall, she simply writes an opinion at her own ideal point. Moreover, the quality of her opinion does not change, because it is only a function of the cost of effort and her (exogenous) degree of influence on the law.

Consider next how the potential dissenting justice's ideological location affects the majority opinion. As the potential dissenter becomes more moderate, the majority opinion becomes more moderate and of higher quality. The intuition here is that the more moderate (but identical quality) dissenting opinion is more attractive to the median. To keep ensure the median will still prefer the majority opinion, the majority opinion author must compensate. The optimal strategy for the majority author is to concede somewhat along each dimension. Precisely how much on each dimension is shaped by the marginal costs, but the goal is simply to ensure the median continues to (at least weakly) prefer the majority opinion to the dissent. For the majority opinion author, the question is how much effort he is willing to invest to minimize avoid producing a combination of opinions that will yield undesirable undesirable outcomes with higher variance.

Dissenting opinion influence. Finally, consider how the degree of influence a minority opinion can have (π) affects equilibrium opinions. With respect to quality, minority opinion influence increases the quality of both majority and minority opinions. Minority opinion influence increases the quality of dissenting opinions, because it justifies further effort by the dissenting justice. The opinion will be more influential on outcomes, and so additional investment in quality improves outcomes from the dissenter's perspective. At the same time, minority opinion influence increases the quality of the majority opinion, but via a different mechanism. In order to hold onto the

majority (i.e., ensure the median joins the majority opinion), the majority justice must compete with the dissent, which improves from the median’s perspective, as minority influence increases. (As π increases and the opinion location remains constant, because it is simply located at the dissenter’s ideal point, the dissenting opinions becomes strictly more attractive.)

However, the majority opinion author’s response to increasing minority influence is not just to choose an equilibrium opinion with higher quality—the opinion’s policy content also shifts towards the median. How much the opinion moves along each of these dimensions—policy and quality—is determined by model parameters. However, the crucial point is that as minority opinion influence increases, the median is made better off because of the competition it induces between the dissenting and majority justices. As we see in the next model, this result becomes more complicated when we allow minority influence to arise endogenously from that competition.

Taken all together these comparative statics reveal an important feature of how judicial opinions are affected by influential dissenting opinions. Both the quality and doctrine content respond to incentives created by the possibility of a dissent affecting future applications of the law. In this way, our model reveals previously unappreciated mechanisms by which the bargaining process so widely documented (e.g., Epstein and Knight 1997, Maltzman, Spriggs and Wahlbeck 2000, Murphy 1964) influences how majority opinions are crafted. Moreover, the findings engage both theoretical and empirical literature on how high court judges seek to manage a complex hierarchy of judges who apply their decisions (e.g. Beim, Hirsch and Kastlelec 2014, Beim and Kastlelec 2014, Carrubba and Clark 2012, Klein 2002, Kornhauser 1994, Westerland et al. 2010).

4 Endogenizing Minority Influence

The baseline model helps establish how the potential for a dissent affects collegial opinion-writing. Moreover, the model illuminates the conditions that give rise to justices writing potentially influential dissents. We now turn to a straight-forward extension of our model, considering the minority justice’s ability to shape the degree of influence her dissenting opinion has. This model will help illuminate how the incentive to be influential complicates the incentives characterized above.

4.1 Primitives

We retain the exact same structure in this model, save for one modification. In the baseline model, the degree of minority influence was an exogenous parameter, π . We now endogenize that parameter, allowing it to be a direct function of the dissenting opinion's *quality*. The logic underlying this extension is that to the extent the rigor and coherence of a legal argument influence the degree to which it is embraced and adopted by others, justices can (at a cost) harness this influence. Well-argued positions in the law can have more influence, and a well-reasoned dissent might be more likely to be embraced than a less-well-reasoned dissent. To capture this phenomenon, we adopt a simple functional form and assume $\pi = \frac{q_L}{2}$. A dissenting opinion of maximum quality ($q_L = 1$) would have $\pi = .5$, whereas a dissenting opinion of the lowest quality, $\pi = 0$, would have no impact on the law. An immediate consequence of this assumption, as we will see, is that the incentive to write a dissenting opinion with zero quality vanishes. Any dissenting opinion with positive probability of being written has strictly positive quality.⁸

4.2 Analysis

We begin as in the baseline model by first considering the incentive for a justice to write a dissenting opinion. As in the previous model, there are two possible scenarios. In the first, the potential dissenting justice does not anticipate attracting the median's vote and so simply writes the optimal opinion she can, given the dynamics we have assumed about implementation of the dissent. In the second scenario, the justice contemplates attracting the median's vote. We show below that, as in Lax and Cameron (2007), this scenario shapes the majority opinion-writers strategic calculus and does not emerge as an equilibrium outcome. The core distinction between the baseline model and this model is that the incentive to invest in quality is shaped by the dissenting opinion quality's direct effect on the relative influence the dissent itself.

The optimal dissenting opinion, in a scenario where the dissenting justice does not seek to

⁸Of course, we might imagine a justice writes a zero-quality dissent without the anticipation that it has any influence. We assume that when indifferent between writing a zero-quality opinion and not, the justice does not write the opinion. This assumption simply sets aside the case where a justice takes actions that have no substantive impact on the game. (Notice the best a justice could be is indifferent between writing and not writing a zero-quality dissent. Because the dissent has zero quality, it has no impact on policy outcomes and no impact on the cost of writing. Therefore, her utility is the same in the presence or absence of a zero-quality dissent.)

attract the median's vote is simply given by

$$o_L^* = \operatorname{argmax}_{p_L, q_L} \frac{q_L}{2} \cdot (-(j_L - p_L)^2 - (1 - q_L)) + \left(1 - \frac{q_L}{2}\right) \cdot (-(j_L - p_R)^2 - (1 - q_R)) - c(q_L) \quad (4)$$

In a scenario where the the dissenting justice is not attempting to attract the median's vote, she faces no incentive to locate the opinion anywhere but at her ideal point. Thus, the optimal opinion location, p_L will always be at j_L . However, in contrast to the baseline model, the dissenting justice can shape that influence by investing in quality. Thus, the optimal opinion's quality will be more complex, as it balances the costs of investing in quality against both the effect it has on variance and the relative weight it has on the opinion's influence. The solution to Equation 4 is therefore given by

$$o_L = \langle p_L = j_L, q_L = \frac{j_L^2 - 2j_L p_R - q_R + p_R^2}{2(2c - 1)} \rangle.$$

Notice that optimal quality can be negative for sufficiently moderate dissenting justices (i.e., with ideal points close to 0) and greater than 1 for sufficiently extreme dissenting justices (i.e., with ideal points close to -1 , relative to the majority opinion). Thus, the optimal dissenting opinion, conditional on not seeking the median's vote, conditional on a majority opinion, $o_R = \langle p_R, q_R \rangle$ is given by:

$$o_L^*(o_R) = \begin{cases} \langle j_L, 1 \rangle & \text{if } j_L < p_R - \sqrt{q_R + 2c - 2} \\ \langle j_L, \frac{j_L^2 - 2j_L p_R - q_R + p_R^2}{2(2c - 1)} \rangle & \text{if } j_L \in [p_M - \sqrt{q_M + 2c - 2}, p_R - \sqrt{q_R}] \\ \langle j_L, 0 \rangle & \text{otherwise} \end{cases} \quad (5)$$

Lemma 1 *Given a majority opinion, o_M , in a model with endogenous dissenting opinion influence, the most extreme dissenting justices prefer to write opinions at maximum quality, and the most moderate dissenting justices prefer to write opinions at minimum quality. Justices in between prefer to write dissenting opinions with interior quality.*

Consider, though, the incentive to write such a dissent. As in the baseline model, we consider what conditions are necessary for a dissenting justice to prefer writing an optimal dissent rather than either attracting the median's vote or "giving up" and not writing any dissenting opinion. In the baseline model, a justice would only be willing to write a dissenting opinion if she was

extreme enough. More moderate justices didn't gain enough to justify investing in opinion-writing. However, in this model, all justices prefer to write a dissenting opinion. To see this, note that

$$\frac{q_L^*}{2} \cdot (-1 + q_L^*) + \left(1 - \frac{q_L^*}{2}\right) \cdot (-(j_L - p_R)^2 - 1 + q_R) - c(q_L^*) > -(j_L - p_R)^2 - 1 + q_R$$

Thus, no matter what opinion the majority justice has written, the minority justice is always able to write an opinion whose effort is justified by its potential influence.

Remark 3 *In the model with endogenous dissenting influence, the dissenting justice always prefers to write the optimal dissenting opinion rather than accept the majority opinion. Further, the dissenting justice cannot credibly commit to not writing a dissent.*

Lemma 1 and Remark 3 provide a foundation for understanding the incentives a dissenting justice faces when deciding how to respond to a majority opinion. However, these are only partial results and do not fully characterize equilibrium behavior, to which we now turn.

4.2.1 Equilibrium

Having considered the incentive to write a dissenting opinion, we are now prepared to characterize equilibrium behavior. The logic underlying the equilibrium parallels the baseline model. Therefore, we focus our attention here on characterizing equilibrium behavior itself before turning to comparative statics and an evaluation of the effects of endogenizing dissenting opinion influence.

The core distinction between the baseline model and this model is that there exist only two classes of equilibrium behavior. As we saw in Remark 3, the dissenting justice in this model always prefers to write a dissenting opinion rather than accepting the majority opinion, ruling out the suppressed dissent outcome. As a result, equilibrium behavior simply depends on whether the median and majority justices prefer to agree on a majority opinion or fracture and force a plurality outcome.

Proposition 3 *For sufficiently large κ , there exists a subgame perfect Nash equilibrium in which the majority justice writes an opinion located between her ideal point and the median's ideal point, which the median supports, and the minority justice issues a dissenting opinion. Otherwise, the justices fracture and produce a plurality decision.*

The particular opinions the justices produce in equilibrium are as follows. First, the majority justice writes an opinion that is increasing in her extremity (i.e., more extreme justices write more

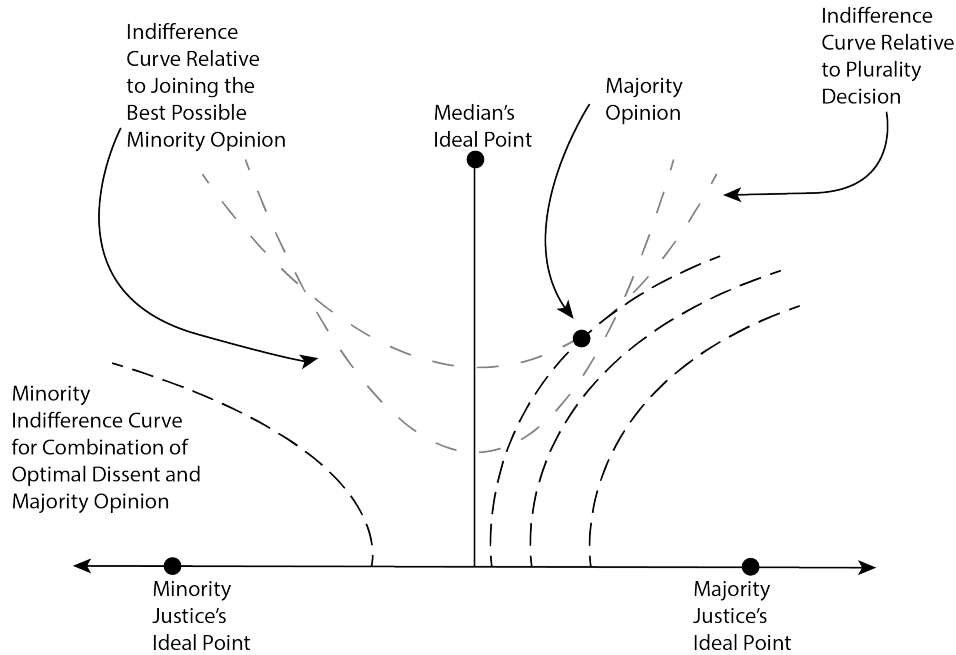


Figure 2: *Representation of calculation of equilibrium strategy in model with endogenous dissent influence.*

extreme opinions). As we see below in our discussion of comparative statics, though, there is a complex relationship between the opinion authors' preferences and opinion quality. The exact location of the opinion—in policy-quality space—is constrained by the need to keep the median's vote.

That calculation entails two possibilities—either accepting a plurality or being willing to join the minority justice. Thus, to identify the optimal majority opinion, the majority justice identifies the median's indifference curves associated with either alternative (plurality outcome or joining a minority opinion) and selects the best option that satisfies both indifference conditions. We summarize this problem in Figure 2. In particular, the majority justice evaluates possible opinions that are equally attractive—represented by the dashed indifference curves about her ideal point. She then finds a point of tangency between her own indifference curves and the median's indifference curve relative to accepting a plurality and the median's indifference curve relative to joining a the best dissenting opinion the minority justice is willing to write in order to secure a majority. This will be the optimal majority opinion that can hold the majority together.

From the dissenting justice's perspective, matters are a bit simpler. She simply needs to decide whether her optimal dissenting opinion is better than not writing at all. In Figure 2, the dashed

indifference curve about the minority justice’s ideal point shows her utility from writing her optimal dissenting opinion. Provided that utility is positive, she is willing to write her dissent with positive quality; otherwise, she simply writes a dissent at her ideal point, with zero quality. Substantively, this takes the form of short, cursory dissents. The analytic expression of the majority opinion’s location and quality is complex but unique; thus we relegate it to the appendix. The dissenting opinion is given by evaluating Equation (5) at that majority opinion location and, as a result, is also unique.

4.2.2 Comparative Statics

As we did for the exogenous model, we follow our equilibrium analysis with an exploration of how the presence of a strategic potential dissenter affects the majority author’s incentives. There are important differences between these comparative statics results and the ones from the exogenous model above. To best see the contrast, we organize our discussion of comparative statics around equilibrium outcomes, rather than exogenous parameters. We then turn below to a focused discussion of the contrasts between the two models.

Dissenting opinion. It is useful to first consider the potential dissenting opinion. As in the baseline model, the dissenting opinion will always be located at the dissenting opinion author’s ideal point. Thus, the only comparative statics to consider relate to the dissenting opinion’s quality. Whereas in the baseline model, quality was effected only by the dissent’s influence and the cost of effort, in this model, influence is endogenous to the effort itself. The result is that dissenting opinion quality decreases in the potential dissenting author’s ideal point. More moderate dissenters write lower quality opinions. The reason is twofold. First, more moderate dissenters stand to suffer less distulity from the majority opinion—by the fact of being more moderate they find majority opinion outcomes less distasteful and so have less incentive to increase the dissent’s influence. Second, more moderate dissenters write opinions whose ideological content is relatively more appealing to the median and so have less need to compete along the quality dimension to ensure the majority author will play his equilibrium strategy and not deviate to a more extreme, lower quality opinion. (Of course, the threat to invest in quality is not credible, and so this effect is only second-order.)

Further, there are two notable exogenous effects on the dissenting opinion quality that are in

in contrast to the baseline model. First, in this model dissenting opinion quality increases in the majority opinion author's ideal point. The logic parallels what we just discussed—as the majority opinion author becomes more extreme, the consequences of the majority opinion become worse and therefore justify investing in effort to increase the dissent's influence on the law. Second, whereas in the baseline model dissent quality strictly decreased in the cost of effort, in this model the cost of effort *increases* quality. The mechanism here is more complicated. As the cost of quality increases, neither the majority nor the dissenting opinion author wants to invest more in quality, from a pure incentive perspective. However, in equilibrium, it is the majority who sees less benefit from investing in quality. Quality decreases the variance of majority opinion, but that is all. From the dissenter's perspective, quality both decreases variance of the dissent but also increases the dissent's influence. Comparatively, this means the potential dissenter see more upside than the majority opinion author, from investing in quality. As the cost of investing in quality increases, the result is that the dissenter is incentivized in equilibrium to take advantage of the majority opinion author's greater distaste for effort. The larger cost for her is outweighed by the opportunity to leverage the majority's cost of effort to exert greater influence on the law.⁹

Majority opinion. Understanding how the dissenting opinion changes with the opinion author's ideal points, we now consider the majority opinion. Its equilibrium location is related to the majority opinion author's ideal point as it was in the baseline model. More extreme opinion authors write more extreme opinions, with respect to the ideological dimension. However, in contrast to the baseline model, in this model the majority opinion's location is also positively related to the potential dissenting opinion author's ideal point. That is, counter-intuitively, as the potential dissenter becomes more moderate, the majority opinion becomes more ideologically extreme. To understand why, we need to consider the effect of the opinion authors' locations on the quality dimension. These effects are non-monotonic in this model.

In particular, how majority opinion quality is related to the authors' ideal points depends on who is closer to the median—the majority author or the potential dissenter. When the potential dissenting opinion author is further away from the median than is the majority opinion author,

⁹This dynamic is driven by the modeling choice that only the dissent can determine the dissenting opinion's influence. Fundamentally, though, the critical assumption is that the dissent's potential influence is more in the hands of the dissenter than the majority.

then as the majority opinion author becomes more extreme, the majority opinion becomes more extreme but of lower quality. The reason is that the extreme dissenter will write a high quality but ideologically extreme opinion. More extreme majority opinion authors, as a result, find the cost to invest in quality less justified because of the high-quality, extreme dissenting opinion. That higher-quality dissenting opinion undermines the value in investing in quality for the majority, because it decreases the impact of the majority opinion. However, as the potential dissenter becomes more moderate, variance in outcomes increases because of the lower quality opinion, and the majority opinion author is incentivized to invest more in quality, since the majority opinion will now be even more influential on outcomes. In short, allowing quality to endogenously affect each opinion's degree of influence creates complex incentives that give rise to counter-intuitive equilibrium relationships.

4.3 Contrasting Models: Endogeneity's Effect

Comparing comparative statics across our these two models provides a window into how endogenizing minority opinion influence on the law, π , alters High Court members' incentives. The differences in comparative statics, here, arise around exogenous parameters: the location of the majority opinion author, the location of the potential dissenter, and the cost of effort.

First, consider the relative locations of the opinion authors. In the baseline model, we found a majority opinion that was similar to that characterized in Lax and Cameron (2007). More extreme authors produce higher quality opinions that are more ideologically extreme. Similar to Lax and Cameron, we also found that more moderate potential dissenters produce more moderate majority opinions, even when those dissents are in fact published and have influence on the law. Meanwhile, in the baseline model, dissenting opinions are simply located at the dissenter's ideal point with quality that is not related to the opinion authors' ideological locations. When we endogenize minority opinion influence, though, things become more complex. More moderate dissenters yield more extreme majority opinions, because the majority opinion authors seek to compensate for the influence of the dissent. In tandem, more extreme majority opinion authors induce higher quality dissenting opinions, as dissenters try to overcome the application of extreme majority opinions. What is more, across the two models, the dissenting opinion's equilibrium quality is typically higher for any given set of parameter values in the model with endogenous influence than it is in the model with exogenous influence.

The implications of these differences can be understood in the context of the politics of dissenting opinions. In some institutional contexts, dissenting opinions have more potential for influence than in others. As we discuss below, for example, the degree of influence a dissenting opinion has is more variable at higher levels of the judicial hierarchy than at lower levels. Thus, we should expect that because of this institutionalized competition for influence, collegial politics will result in different equilibrium relationships at lower levels of the judicial hierarchy than at higher levels.

Finally, consider the effects of cost on equilibrium opinions. While the effects of the price of investing in opinion quality led to strictly lower quality opinions in the baseline model, its effects are more counter-intuitive when we allow for endogenous dissenting opinion influence. A key finding here is that by allowing competition for influence in the law, dissenting opinion authors need to overcome the institutional advantage that majority opinions have and can respond in complex ways to cost. Opportunity costs, expertise demands, and limited resources might lead a dissenting opinion author to compensate for a majority opinion author's limitations by leaning into the higher cost and leveraging the incentives the majority faces. In this way, by allowing the minority to determine its own degree of influence, the dissenter may very well respond in unanticipated ways to those resource constraints.

5 Implications

We highlight three implications of our models and analysis. First, our models speak to the literature on the breakdown in the norm of consensus at the US Supreme Court. Second, our model provides a novel insight into one mechanism for the differences in dissenting patterns across levels of the judicial hierarchy. Third, our models reveals several implications for the content of the law created by the struggle for influence over the law. We consider each in turn.

The politicization of the courts and the demise of consensus. Scholars of the US Supreme Court have often puzzled at the striking demise of unanimity that took place in the mid-20th century. Ever since John Marshall became Chief Justice in the early 1800s, the Court had typically issued unanimous decisions with relatively few published dissents. Beginning in the 1940s, though, the rate at which dissenting opinions accompanied majority decisions increased sharply. Scholars

have offered a number of reasons for this break with tradition, ranging from increasing ideological division among the justices to the arrival of new, inexperienced justices, to a failure of leadership (e.g., Haynie 1992, Walker, Epstein and Dixon 1988). Importantly, though, the demise of consensus was merely a matter of open dissent; the evidence demonstrates there were indeed meaningful divisions and suppressed dissenting opinions throughout the Court’s history (e.g., Epstein, Segal and Spaeth 2001).

Our analysis helps provide additional theoretical foundations for the breakdown in consensus. In particular, two developments interact in a consequential way. First, during first half of the 20th century the Supreme Court became increasingly involved in high-stakes political topics as the economy unified and the national government played a larger role in topics previously reserved to the states (e.g., Clark 2019). Second, and related, the political attention to and interest in judicial appointments increased (e.g., Cameron and Kastellec 2023). In the context of our model, those developments increase the interest in policy-content and set the conditions for potential dissenting opinions to have greater influence. Those incentives reinforce each other to make it harder to hold together a unanimous coalition because engaging in “damage control” has become too enticing politically to resist. Thus, an implication of our analysis is that the demise in consensus may not be attributable simply to leadership failures or ideological division itself but rather is intertwined with the broader political environment in which judicial opinions are interpreted and applied.

Differences in dissenting across levels of the hierarchy. One of the striking differences across levels of the US judiciary is the lack of dissenting opinions at lower levels of the hierarchy, even in courts where there are law-making functions. In particular, scholars have often noted the practice of suppressed dissents at the US Courts of Appeals, where disagreements might exist but do not result in published dissenting opinions. The research has posited various possible reasons for this practice, ranging from the workload pressures to institutional incentives for collegiality. Our analysis highlights one particular mechanism—the degree of influence an opinion can possibly have. In the baseline model in which a dissenting opinion’s influence is exogenous, we observe suppressed dissents in equilibrium. However, in the model with endogenous dissenting opinion influence, we do not observe suppressed dissents in equilibrium.

In the context of the distinction between the Court of Appeals, we can think of a dissenting

opinion's degree of influence as being largely outside of the judges' control. Courts of appeals have more limited jurisdiction than the Supreme Court, their opinions are subject to reversal by the Supreme Court, and their lower status in the hierarchy endows them with relatively less prestige. Moreover, a dissenting opinion typically represents the views of a single judge on a three judge panel from an entire court (which ranges in size from 6 to 29 judges). For these and related reasons, the extent to which a dissenting opinion at the Court of Appeals can influence the interpretation and application of the law is largely outside the control of the judges. By contrast, Supreme Court justices' dissenting opinions' influence is much more endogenous to the decision-making process. Because the Supreme Court is the apex court, its decisions are applicable to the entire country, and so all judges, lawyers, and litigants have an incentive to take into account the full range of opinions offered. To the extent minority positions are well-reasoned, future judges, lawyers, litigants, and others who need to understand the law have incentives to pay attention to those opinions. From the perspective of our model, the endogeneity of dissenting opinion influence at the Supreme Court provides one possible mechanism for the observed differences in the rates of suppressed dissents across levels of the judicial hierarchy.

Competition for the law and judicial rule-making. Finally, our analysis has implications for the effects of institutional structures on the content of the law. In our model, the degree of ideological polarization (as measured by the space between the various judges' policy preferences) can affect the quality of both dissenting and majority opinions. So, too, can the degree of minority opinion influence. However, the nature of those relationships are not straight-forward. For example, ideological extremism has non-monotonic effects on majority opinion quality. Ideological extremism of dissenting and majority authors, by contrast, have countervailing effects on dissenting opinion quality. Further, we saw above that in the model with endogenous minority opinion influence, the minority opinion quality is typically higher than it is in the model with exogenous opinion influence. This reveals that inducing judges to work for influence increases the quality of the resulting law non-majority opinions. The result is that our model suggests that structured competition for influence over the law can have complex effects on the quality of the law.

These effects speak to literature that studies strategy for developing the law (e.g., Schwartzman and Tebbe 2020). Whereas a great deal of work has examined the implications of institutional

organization in the courts for the efficiency of the law and the locus of power in the law (e.g., Callander and Clark 2017, Gennaioli and Shleifer 2007, Iaryczower and Shum 2012, Kornhauser 1994, Lax 2007), our model helps link the various threads of study that touch on legal quality, political influence, and collegial decision-making (e.g., Clark, Montagnes and Spenkuch 2022, Hirsch and Shotts 2015, Lax and Cameron 2007, Maltzman, Spriggs and Wahlbeck 2000, Stephenson 2009). Both theoretical and empirical work can be informed by taking into account the complex incentives that are created by competition over the law and how they shape the features of judge-made policy.

6 Conclusion

Why and when judges invest effort into producing minority opinions is a subject that scholars of the judiciary have long found perplexing. Moreover, it's a question with potentially deep implications for normative matters about the clarity, stability, and legitimacy of the law. However, few theoretical models yield predictions about the practice that correspond to salient features of observed patterns of dissenting. By incorporating the possibility of minority opinion influence on the law, our model builds an incentive for judges to invest effort into dissenting opinions. The equilibria we characterize capture many of those behaviors that have proved otherwise difficult to rationalize.

The analysis reveals further interactions and incentives that result from influential dissenting opinions. Moreover, our analysis helps reveal subtle ways in which institutional features can (at least partially) account for differences in patterns of dissenting across various courts. The resulting implications engage the study of judicial decision-making, the development of law, and the nature of judicial power. Yet, questions remain. Our model posits a mechanism for minority opinion influence, and that mechanism can be subject to empirical scrutiny. Our analysis also yields novel empirical implications that lend themselves to future empirical interrogation. We expect such work to be fruitful and help identify further puzzles in need of examination.

Grappling with the incentives driving opinion-writing has long been an area of interest in the study of judicial decision-making. By developing theoretical models that increasingly incorporate features of the judicial environment, that research can simultaneously inform our understanding of the collegial politics underlying law-making and the effects of judicial institutions on power and

oversight in the law. A deeper understanding of how preferences on the Court collectively shape the law can expand how scholars approach these and related topics in the science of law.

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Supplemental Results and Formal Proofs

Proof: [**Proof of Proposition 1**] Suppose j_L writes an opinion, $o_L = \langle p_L, q_L \rangle$, without the goal of attracting j_M 's vote, given a majority opinion, $o_R = \langle p_R, q_R \rangle$. The optimal dissent maximizes j_L 's utility,

$$\pi \left(-(j_L - p_L)^2 - 1 + q_L \right) + (1 - \pi) \left(-(j_L - p_R)^2 - 1 + q_R \right) - cq_L^2,$$

with respect to p_L and q_L . The unique maximum is located at $o_L^* = \langle p_L^* = j_L, q_L^* = \frac{\pi}{2c} \rangle$. Given o_L^* , j_M will join a majority opinion, o_R , iff

$$\pi \left(-(p_L^*)^2 - 1 + q_L^* \right) + (1 - \pi) \left(-(p_R)^2 - 1 + q_R \right) - c(q_L^*)^2 \geq -\kappa,$$

which is satisfied as long as

$$q_R \geq \frac{2c(\kappa - \pi \cdot p_L^{*2} + p_R^2(\pi - 1) - 1) + \pi^2}{2c(\pi - 1)} \equiv \tilde{q}_R$$

Given o_L^* , if j_R writes an opinion with quality \tilde{q}_R , the optimal opinion location is

$$p_R^* = \frac{\pi^2 - 2c(-\kappa + j_L^2\pi + 1)}{\sqrt[3]{6(\pi - 1)} \sqrt[3]{\sqrt{3} \sqrt{\frac{c^3 \left(27cj_R^2(\pi - 1)^5 + 2(\pi^2 - 2c(-\kappa + j_L^2\pi + 1))^3 \right)}{(\pi - 1)^3} + 9c^2j_R\pi - 9c^2j_R}} + \sqrt[3]{\sqrt{3} \sqrt{\frac{c^3 \left(27cj_R^2(\pi - 1)^5 + 2(\pi^2 - 2c(-\kappa + j_L^2\pi + 1))^3 \right)}{(\pi - 1)^3} + 9c^2j_R\pi - 9c^2j_R}}}}{6^{2/3}c}$$

j_R 's utility from writing $o_R = \langle p_R^*, q_R^* = \tilde{q}_R \rangle$ is greater than $-\kappa$ for sufficiently low c or a sufficiently high L .

Finally, to see that o_L^* and o_R^* can be sustained in equilibrium, note that conditional on maintaining j_M 's vote, o_R is the optimal opinion that j_R can write, and conditional on not having j_M 's vote, o_L^* is the optimal opinion that j_L can write. Thus, these opinions can be sustained in equilibrium as long as all three judges prefer this pair of opinions to a plurality outcome, which is true for sufficiently large κ . Thus, a sufficient condition for equilibrium existence is a sufficiently large κ . Weaker conditions can also sustain equilibrium existence. Condition (3) provides a minimum constraint for j_L ; parallel conditions exist for both j_R and j_M . \square

Proof: [**Proof of Proposition 2**] Proposition 1 establishes the first claim in the proposition. What remains to be shown is the possibility of two other equilibrium outcomes—suppressed dissents and plurality decisions. To see the possibility of suppressed dissent, notice that it is possible to violate Condition (3) while maintaining a majority opinion with quality \tilde{q}_R . Violation of Condition (3) is sufficient for j_L to prefer to accept the majority opinion and not write her own dissenting. A majority with opinion $q_R \geq \tilde{q}_R$ is sufficient for the median to sign the majority opinion. This establishes the existence of a suppressed dissent outcome. To see the possibility of a plurality outcome, consider an arbitrarily small κ . For such a κ , there is no opinion that either j_L or j_R

would be willing to endorse that j_M would also find acceptable. This establishes the existence of a plurality outcome. \square

Proof: [**Proof of Lemma 1**] Because the dissenting justice chooses her opinion after the majority justice, given majority has selected an opinion o_M and the dissenting justice does not want to attract the median's vote, her optimal strategy is given by

$$o_L^* = \operatorname{argmax}_{p_L, q_L} \frac{q_L}{2} \cdot (-(j_L - p_L)^2 - (1 - q_L)) + \left(1 - \frac{q_L}{2}\right) \cdot (-(j_L - p_R)^2 - (1 - q_R)) - c(q_L) \quad (6)$$

The solution to Equation 4 is

$$o_L = \langle p_L = j_L, q_L = \frac{j_L^2 - 2j_L p_R - q_R + p_R^2}{2(2c - 1)} \rangle.$$

Notice that it is possible that $q_L \notin [0, 1]$. Thus, solution subject to parameter constraints is:

$$o_L^*(o_R) = \begin{cases} \langle j_L, 1 \rangle & \text{if } j_L < p_R - \sqrt{q_R + 2c - 2} \\ \langle j_L, \frac{j_L^2 - 2j_L p_R - q_R + p_R^2}{2(2c - 1)} \rangle & \text{if } j_L \in [p_R - \sqrt{q_R + 2c - 2}, p_R - \sqrt{q_R}] \\ \langle j_L, 0 \rangle & \text{otherwise} \end{cases} \quad (7)$$

\square

Proof: [**Proof of Proposition 3**] Lemma 1 establishes that there exists a unique optimal dissenting opinion that j_L will write if j_R has written an opinion that j_M will accept. Given j_L will write the opinion characterized in Lemma 1, the partial derivative of j_R expected utility, with respect to q_R is given by

$$\frac{32c^3 q_R - 16c^2(2q_R + 1) + 4c(j_R(j_L - p_R) - j_L p_R + q_R + p_R^2 + 4) - 2j_R j_L + 2j_R p_R + j_L^2 + q_R - p_R^2 - 4}{4(1 - 2c)^2}.$$

This derivative equals zero at a unique value point,

$$q_R^* = \frac{16c^2 - 4c(j_R(j_L - p_R) - j_L p_R + p_R^2 + 4) + 2j_R(j_L - p_R) - j_L^2 + p_R^2 + 4}{32c^3 - 32c^2 + 4c + 1}.$$

The second derivative is negative, ensuring q_R^* is a global maximum. Substituting q_R^* into j_R 's expected utility function and maximizing with respect to p_R identifies a unique real-valued global maximum, which we denote p_R^* . For an sufficiently large κ , the median will prefer joining the opinion denoted $o_R^* = \langle p_R^*, q_R^* \rangle$, with the understanding that j_L will write the dissenting opinion characterized in Lemma 1. A sufficient condition for equilibrium existence is therefore that κ is large enough that both j_M and j_R prefer the mix of o_R^* and o_L^* . Notice that neither opinion is a function of κ , which proves that the equilibrium can be supported for an arbitrarily large $\kappa \equiv \bar{\kappa}$.

Suppose $\kappa < \bar{\kappa}$. In this scenario, at least one of j_M and j_R prefer a plurality outcome to a mixture of the dissent and majority opinions. In this case, any opinion location is feasible, because opinion content does not affect policy outcomes. Any equilibrium opinion, though, has $q = 0$, because quality is costly and does not affect outcomes. \square

	Exogenous	Endogenous
$\frac{\partial p_R^*}{\partial j_R}$	+	+
$\frac{\partial p_R^*}{\partial j_L}$	-	+
$\frac{\partial p_R^*}{\partial c}$	-	+
$\frac{\partial p_L^*}{\partial j_R}$	0	0
$\frac{\partial p_L^*}{\partial j_L}$	+	+
$\frac{\partial p_L^*}{\partial c}$	0	0
$\frac{\partial q_R^*}{\partial j_R}$	+	+/-
$\frac{\partial q_R^*}{\partial j_L}$	+	+/-
$\frac{\partial q_R^*}{\partial c}$	-	-
$\frac{\partial q_L^*}{\partial j_R}$	0	+
$\frac{\partial q_L^*}{\partial j_L}$	0	-
$\frac{\partial q_L^*}{\partial c}$	-	+

Table 1: Comparative Statics in Exogenous and Endogenous Models