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Non-confrontational extremists☆

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ABSTRACT

In many contexts individuals are subject to norms and decisions they disagree with ideologically. What is the effect of regularly being in an ideological minority on the propensity to confront majority norms and decisions? We study this in an ideologically-salient field setting – US appeals courts – using exogenous predictors of ideology and random assignment of judges. We find that ideological interaction silences extremists: Judges who are ideologically extreme relative to their peers are less confrontational – dissent less often – than other judges, despite shaping case outcomes the least. Considering many mechanisms, we find that a model of peer pressure where agents perceive concave ideological costs can explain the observations.

1. Introduction

Does holding non-mainstream views make a person prone to challenge norms and decisions? This question has remained empirically open due to unobservability of individual ideology and due to endogeneity of the choice of whom to interact with. We provide a first answer to this question using data from a high-stakes field setting – the U.S. Courts of Appeals (U.S. Federal Circuit Courts) – where these two problems are resolved: There exist commonly used measures of individual ideology; and whom an individual interacts with is determined exogenously.

Each Circuit Court consists of a pool of judges from which, for each judicial case, three judges are randomly assigned to sit together on a panel. The panel decides on a verdict (affirming or overturning the lower court verdict) and composes an "opinion" (i.e., a text) motivating the verdict. It is well documented that ideology plays an important role in setting a case's outcome (e.g., Epstein et al. 2013; Sunstein et al. 2006; Berdejó and Chen 2014).[1]

Roughly speaking, the way by which an individual judge's action can affect the judicial outcome is twofold: (1) the judge may have a direct effect on the case outcome; (2) if the judge does not manage to directly affect it, she may write a minority opinion (dissent) thus confronting the majority opinion. Should we expect judges in ideological minority ("extremists") to have an impact on case outcomes? If not, should we expect them to behave more confrontationally (i.e., dissent more) than others? We answer these questions by presenting robust empirical results showing that (I) extremists rarely affect the verdict (Section 3.1) and (II) a

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[1] Ideology (or personal preferences) has also been documented to play a role in other courts. See, for instance, Cohen et al. (2015) and Anwar et al. (2018) for recent evidence.

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judge's ideological disagreement with the current panel majority is a strong predictor of when she will dissent (Section 3.2), yet (III) extremists, i.e., those who are most*frequently* in ideological disagreement with others, are on aggregate the least confrontational against majority opinions (Section 3.3). This final observation is surprising given that (I) and (II) imply that these extremists have the most reasons to be confrontational.

Our empirical analysis indicates that this finding—that judges who are in strong ideological disagreement with their peers on the judge pool remain silent—is not about people with extreme ideology per se. Rather, we emphasize that it occurs when a judge is ideologically extreme *relative* to her current pool of peers. We also emphasize that while ideological disagreement in a given single interaction drives dissent, *repeatedly* disagreeing with one's peers reduces one's propensity to dissent. This suggests that constant interaction between peers with different ideological views silences those whose views are far from the mainstream. The implications of this finding are that such settings may hide undercurrents of dissatisfaction, distort the perception of the distribution of views and create false impressions of consensus where it is absent.

To understand what may be the reason for this silencing, i.e., to rationalize the empirical observations, we consider a large number of explanations that touch upon various aspects of judicial and group decision making (Sections 4 and 5). Out of these various explanations, only two are able to account for all the empirical observations presented: one where confrontation (dissent) has an expressive purpose and one where it has an instrumental purpose (trying to reverse the verdict using the Supreme Court). We develop formal models for both explanations and derive auxiliary predictions for these two models along dimensions by which they differ. Testing these predictions refutes the instrumental model (which is hence relegated to Appendix D.2) and lends support to the expressive-dissent model which is therefore described in detail in the main text (Section 4). This model, which is inspired by Beim et al. (2014) and Cameron and Kornhauser (2009), has the following features.[2]

Three judges are randomly assigned to a panel, where they negotiate over the ideological flavor of the verdict, with the median judge succeeding to set the verdict to match her own ideology. Each judge then decides whether to confront this verdict by formally dissenting. Doing so is costly in terms of time and collegiality.[3] But not dissenting entails a personal cost: the more often a judge signs verdicts she disagrees with, the worse she feels. We show that the trade-off for if and when to dissent may drive judges with non-mainstream ideology to be less confrontational than judges with more mainstream ideologies. However, this result holds only provided that the individual's ideological cost is concave. A concave ideological cost captures that once a person has deviated from what she considers ideologically or morally right, she becomes almost numb to additional deviations. It has been shown to apply to behaviors such as truth-telling (Kajackaite and Gneezy 2017, Gino et al. 2010, Hurkens and Kartik 2009) and voting (Kendall et al. 2015).

The intuition for the result is as follows. A judge who is in ideological minority in the greater group of peers (the court's pool of judges) will rarely be the median judge in a panel and will often have to decide whether or not to sign verdicts she disagrees with. However, always dissenting on verdicts she does not like would imply a very high collegial pressure as she will be facing such verdicts virtually all the time, and signing only some verdicts while dissenting against others helps little when the perceived cost of signing few unfavorable verdicts instead of many is almost the same. Hence, facing a sufficiently high collegial pressure, such an extreme judge will tend to always sign the verdict, thus being non-confrontational. In comparison, judges whose ideology is closer to the mainstream will more often be the median of their panels, or agree with the decision of the median of the panel, hence will less often need to decide whether to sign unfavorable verdicts. So when they do face this problem they dissent, since the cost of deviating from their ideological bliss point (due to the concavity) is high even if it is only rarely done. Such judges will therefore dissent from time to time. Thus, overall, judges far from the mainstream ideology will be the least confrontational despite having the most reasons to be just that (rarely affecting the verdict and often disagreeing with the panel's verdict). More precisely, our theoretical model predicts and the empirical results show (see visualization in Fig. 3) a hill-shaped relationship between a judge's dissent rate and how extreme she is relative to the greater pool of judges she interacts with. That is, centrist judges rarely dissent, moderately ideological judges often dissent and extremely ideological judges rarely dissent. The above theoretical logic does not hold if the personal cost of bliss-point deviation is linear or convex. In the conclusions (Section 6) we discuss the broader implications of our empirical and theoretical findings.

2. Identification and data

2.1. Institutional background and empirical strategy

The U.S. Federal Courts are a system of local level (District Court), intermediate level (Circuit Court), and national level (Supreme Court) councils. Members of these are appointed by the U.S. President and confirmed by the U.S. Senate. They are responsible for the adjudication of disputes involving federal law. Their decisions establish precedent for adjudication in future cases in the same court and in lower courts within its geographic boundaries. Each state has 1–4 District Courts. The 94 U.S. District Courts serve as trial courts with juries. The 12 U.S. Circuit Courts (Courts of Appeals), which are the empirical focus of this paper, take cases appealed from the District Courts. Circuit Courts rule on the application of federal law, such as the constitutional validity of state

[2] The conclusion that dissents are not meant to affect the Supreme Court is in line with that of Kim (2009).

[3] A very large literature, including judges' writings about their own experience, documents a norm of consensus (see e.g. Edwards and Livermore 2008). Epstein et al. (2011) refer to this as "dissent aversion". This literature attributes the peer pressure largely to collegiality concerns (Fischman 2011; Hettinger et al. 2007, Sunstein et al. 2006).

laws, among other things. 98% of their decisions are final. Hence, they have a substantial impact on precedence, decision making and policy in the US.

Each Circuit Court presides over 3–9 states and consists of 8–40 judges serving at any one point in time (depending on the circuit). We refer to the judges serving at the same Circuit at a particular point in time as the **pool of judges**.

The Circuit Courts have no juries. Instead, every judicial case gets assigned three judges from the court's pool. We refer to these three judges as a **panel**. The panel decides on a binary verdict (affirming or overturning the lower court's verdict), where a majority of two judges is needed to set the verdict (formerly called "disposition"). The panel also composes an **opinion** (i.e., a text) motivating the verdict. The opinion serves as precedent for future cases and as such has a large impact on society and policy. A judge has to write a separate (minority) opinion if she either **dissents** (votes against the binary verdict) or **concurs** (votes for the verdict but for a different reason, as manifested in her minority opinion).[4] Both dissents and concurrences are costly in terms of time and collegiality and they cannot be cited as binding precedent. Note that, for a judge, dissenting and concurring are two mutually exclusive actions that both imply expressing dissatisfaction with the court's decision—a form of confrontation.

Our empirical strategy rests on the premise that judges do not choose whom to interact with. This is determined by (1) the assignment of judges into panels; and (2) the assignment of judges to the pool from which the panels are drawn. Both (1) and (2) are plausibly exogenous for a single judge.

(1) Starting with the assignment of judges into *panels* within a Circuit Court, it is "as if" random. The assignment rules vary by circuit (see Appendix A.1.2). True, some circuits take into account concerns such as workload, leading some scholars to argue that case assignment is not fully random but only quasi-random (e.g. Chilton and Levy 2015, Hall 2010). However, previous research shows that cases are not systematically assigned to judges based on their own or the cases' characteristics.[5] We verify this for our data in Appendix A.1.2. Thus, we follow previous research (e.g., Beim et al. 2021) in treating case assignments in these courts as being as-if-random.

(2) We move now to describing the assignment of judges into *pools*. Appointment of judges to Circuit Courts is done by the President and confirmed by the U.S. Senate. Strictly speaking, a judge may of course turn down such a job offer and there is scarcely any way of knowing the extent to which this happens. But vacancies are rare and it is considered a great honor to serve in a Circuit Court—for most judges this would be the peak of their career. Hence, we do not find it likely that a judge will turn down an offer awaiting a better one.[6] Importantly, given the life tenure of judges, once a judge is appointed she has no control over her peer group in practice. This is since 96% of all judges serve until they retire or pass away and since a vacant position on a circuit appears only when a judge retires (61% of vacancies in our sample), passes away (12%) or the number of seats is expanded (24%)[7] while resignations are rare (3% of vacant positions). So, while it cannot be entirely ruled out that judges within a circuit pressure each other to quit, this is not a quantitatively important problem for what we do. Our maintained empirical assumption is that a judge cannot affect which peers are in her pool.

As an analogy, we think of a circuit at a point in time as a society consisting of 'many' individuals. Each case and its panel then represents a single interaction within that greater society. Each person in this society is 'forced' to interact with many different individuals.

2.2. Data and main variables

We utilize data on judges' identity, characteristics and ideology; data on which judges serve at which Circuit Court at any particular point in time; and data on which judges sit in any particular case, including information on who, if anyone of them, dissented or concurred in this case. Finally, we use data on the ideological leaning of the verdicts.

Data on judges' identity, characteristics, and where they served (for the universe of all Circuit-Court judges) comes from the Appeals Court Attribute Data[8] and the Federal Judicial Center.

For the **Judges' ideology score** (sometimes referred to just as 'score') we use a standard summary measure coming from the Judicial Common Space (JCS) database (Epstein et al. 2007) that was first coded by Giles et al. (2001). This dataset covers the universe of all Circuit-Court judges. In essence, a judge gets assigned the ideology of those who appointed him/her. That is, the key assumption underlying the ideology score is that the appointing politicians take the opportunities they get to assign judges of their ideological liking. The motivation for this assumption is that vacancies are rare and that Circuit Courts have a substantial impact on policy. The ideology score is constructed as follows. If a judge is appointed from a state where the President and at least one home-state senator are of the same party, the nominee is assigned the ideology score of the home-state senator (or the

[4] Given the binary nature of the verdict, at most one judge will dissent, but it can be that one judge dissents and another one concurs (where the third judge writes the "majority" opinion).

[5] Indeed, Chen and Sethi (2011) use data from Boyd et al. (2010) and Sunstein et al. (2006), who code 19 case characteristics as determined by the lower court for 415 gender-discrimination Circuit Court cases, and find that case characteristics are uncorrelated with judicial-panel composition; Berdejo and Chen (2016) report omnibus tests of whether case and litigant characteristics vary over 4-year cycles; and Chen (2016) does the same for the caseloads and characteristics of judges authoring or sitting on the panel.

[6] On average there is a vacancy once every 1.5 years for any single circuit (naturally, less often for smaller circuits and more often for larger ones, see Appendix Figure 1 for the distribution of judges' tenure). By then, the window of opportunity may have changed due to a change of President or senators or due to the arrival of competitors that better fit these politicians' tastes. Among judges in Circuit Courts, 50% come from District Courts which have no panels, 10% come from high-level State Courts which do have panels and 40% come from other backgrounds.

[7] New seats appeared, for instance, when the 5th Circuit was split into two in 1981.

[8] http://www.songerproject.org/attributes.html

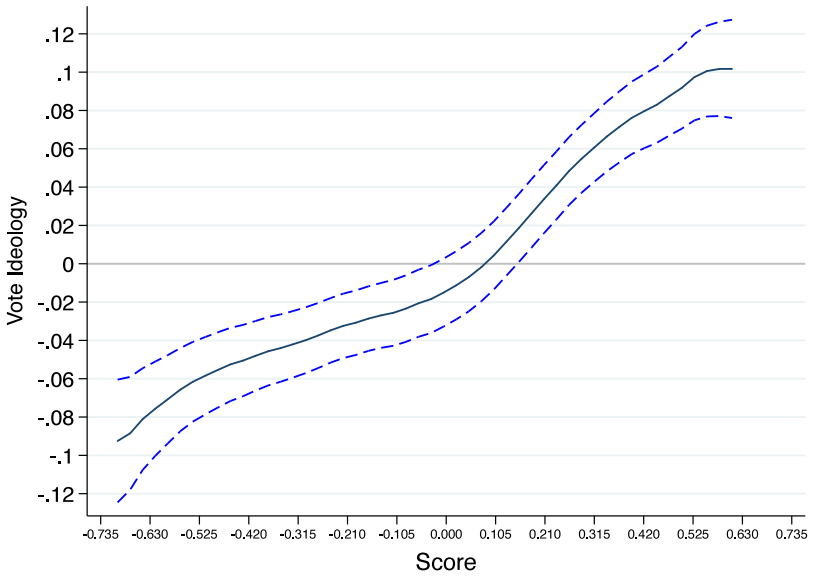

Fig. 1. Vote Ideology and the Judicial Common Space database Ideology Score - local polynomial.
Notes: x-axis: (Non-demeaned) Judicial Common Space database Ideology score of a judge, where more conservative scores are along the right on the x-axis. y-axis: Vote ideology, demeaned to be centered at zero. The figure presents a local polynomial regression with an Epanechnikov kernel, where the dependent variable is Vote Ideology, which is coded as 1 for conservative, 0 for mixed or not applicable, and −1 for liberal. The dashed lines depict the 95% confidence interval. Data come from the U.S. Courts of Appeals Database Project (1925–2002 5% Sample).

average of the home-state senators if both members of the delegation are from the President's party).[9] If neither home-state senator is of the President's party, the judge receives the score of the appointing President. The score thus assumes that the President does favors to senators from the same party while ignoring the preferences of senators from the other party. This is motivated by the norm of senatorial courtesy by the President. The ideology score takes values in between roughly ±0.7 (see Appendix Figure 2 for a histogram of the distribution of ideology scores in our data). This is thus a unidimensional score, which assumes that various ideological dimensions can be effectively collapsed to only one that goes from 'very liberal' to 'very conservative'.

The ideology score has two main advantages. First, it is predetermined, since it assigns the ideology of the judge *before* her behavior at the court is observed. This is of course key for identification since we are interested in how a judge's behavior at the court is affected by her ideology. The second main advantage of this score is its high ability to predict judges' voting patterns in court, as clearly visualized in Fig. 1.

Many papers have used this score (e.g. Peresie 2005 and Kim 2009), which was referred to by Cross (2007, p. 19) as the "best currently available measure for circuit court judicial ideology".[10] It is thus our maintained assumption that the appointing President's and senators' ideology is a good proxy for the judge's ideology. For robustness, we use the party of appointing President as an alternative ideology score, and find qualitatively the same results: see Section 3.3.

The data on dissents and concurrences come from Openjurist, which contains all published cases from 1950 to 2007 (all summary statistics are presented in Appendix Table 2). The data was first digitized by Berdejó and Chen (2014) for whether there was a dissenting opinion and whether there was a concurring opinion. We extract the judge names and merge each judge with his/her characteristics (from the Appeals Court Attribute Data and the Federal Judicial Center, see above).

Data on the ideological flavor of verdicts come from the U.S. Courts of Appeals Database Project, a random sample of roughly 5% of appeals-courts decisions from 1925 to 2002.[11] This database includes hand-coded information on the ideological content of each coded verdict (liberal = −1, conservative = 1, and mixed or unable to code = 0), to which we will refer as **Verdict Ideology**.[12] This database also reports dissents for the cases that it covers. Together with the data on judges' identities (from the Appeals Court Attribute Data and the Federal Judicial Center, see above) we are able to measure, for each judge, the average ideology of her coded votes. This measure is set to equal the coded ideology of the verdict if the judge did not dissent and gets the opposite coding if

[9] The scores of the senators are located in a two-dimensional space on the basis of the positions that they take in roll-call votes, but only the first of the two dimensions is salient for most purposes. The ideology scores of Presidents are then estimated along this same dimension based on the public positions that they take on bills before Congress.

[10] A further discussion of existing ideological measures and their pros and cons appears in Appendix A.1.

[11] Documentation and data available at http://www.songerproject.org/us-courts-of-appeals-databases.html.

[12] The Appeals Court Database Project states that for most issue categories, these will correspond to conventional notions of "liberal" and "conservative". The directionality codes parallel closely the directionality codes in the Spaeth Supreme Court database.

the judge dissented. We call this variable **Vote Ideology** and it reflects the ideology of verdicts a judge signs and composes (this variable is used, for instance, in the y-axis of Fig. 1).

Our sample contains 293,868 decisions in Openjurist and 18,686 decisions in the Courts of Appeals database. Overall, 8.5% of opinions in Openjurist have dissents and 6.4% have concurrences.[13]

To summarize, dissent and concurrence rates come from Openjurist and are used in one set of analyses. Verdict Ideology comes from the Appeals Court Database Project and is used in a separate set of analyses. Both analyses use a merge to datasets that include the universe of judges' identity, characteristics and ideology and information on where these judges served.[14]

3. Empirical results

In this section we present our three main empirical observations. The first two observations essentially provide evidence that single interactions (within a panel) reflect the mainstream ideology of the members of our "experimental societies" (different Circuit Courts) and that ideology is salient in individual decisions. We do this by (1) showing that in any single interaction (panel) the verdict reflects (mainly) the ideology of the median (Section 3.1) and that extremists have a small impact on the verdict (Appendix A.2.1); and (2) showing that ideological disagreement with the median in a single panel (Section 3.2) triggers dissent. We then move to our main observation that extremists are non-confrontational by showing that (3) the frequency of dissent—the judge's main tool of confrontation—is first increasing and then decreasing as a function of a judge's ideological distance from the average ideology of her peers in the pool (Section 3.3).

3.1. Who affects the ideological flavor of verdicts?

We check here whose ideology is reflected in the decisions made, i.e., in the verdicts. Given the randomization of judges into panels, we have a setting that enables us to causally query, for each panel, who affects the ideological flavor of the judicial outcome. We do this by measuring the correlation between the ideology of each judge on the panel and the ideology of the verdict when the judge is the median of the panel and when not. That is, we run an OLS regression of the Verdict Ideology (from the U.S. Courts of Appeals Database Project) on a judge's Score and its interaction with whether the judge is the median of the panel in terms of this (ideology) score, controlling for Circuit by year fixed effects (CY_{ct}):

$$\textbf{Verdict Ideology}_{pict} = \alpha + \gamma_1 \textbf{Score}_i + \gamma_2 1\left(i \text{ is median}_{pi}\right) + \gamma_3 \textbf{Score}_i * 1\left(i \text{ is median}_{pi}\right) + CY_{ct} + \nu_{pi} \quad (1)$$

for judge i on panel p in Circuit c and year t.[15] If the ideology of a judge influences the court's verdict, we should expect a positive relationship between the judge's ideology score (where a high value means a very conservative judge) and the likelihood of a conservative verdict. Table 1 shows that the effect of a judge on the verdict is more than threefold when the judge is the median of the panel (compare 0.0309 to $0.0309 + 0.0766$).

Our first empirical result is thus:

Finding 1: *The ideology of the panel median has the strongest effect on the verdict.*

This result is not very surprising given the pivotal role of the median in a three-judge panel and is consistent with many conventional bargaining models. For robustness checks and descriptions of other papers' related results see Appendix A.2.1. In total this shows that in single interactions (i.e., panels) within our experimental society (i.e., a Circuit Court), ideologically extreme individuals have a small effect on joint decisions. Since extremists in the pool are less often median, this result suggests they should have less influence on the totality of verdicts in the circuit year. We corroborate this in Appendix Figure 3.

3.2. Is ideological disagreement decisive for when a judge dissents?

We can think of our experimental society—a Circuit Court at a particular period in time—as consisting of many interactions. For a single agent (a judge), each of these interactions (cases) will be with different constellations of individuals (different panels), and in particular with a different judge having the pivotal role of panel median. We now wish to test whether, for the single agent, ideological disagreement is salient in deciding *when* to confront. What we therefore need is exogenous variation in the panel composition (for each judge). This is provided by the judiciary's as-if-random assignment into panels. Then, we can test whether the ideological distance from the judge to the panel's median, who was just shown to have the largest effect on the verdict, positively affects that judge's decision to dissent. If the result of this test is affirmative, it captures that an individual judge concentrates her fighting to situations of ideological disagreement.

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[13] Of the cases included in the Courts of Appeals database, 7.9% of opinions have dissents and 3.6% have concurrences.

[14] In the OpenJurist sample from 1950–2007, 15% of the votes do not merge with a Judicial Common Space score. Not all judges on Circuit panels are Circuit judges (they may be visiting from the District courts or other courts). We restrict all analyses to panels where all three judges have a merged ideology score. In the Courts of Appeals Database 5% sample from 1925–2002, 55% of three-judge panels have a missing ideology score. The analyses using this data are restricted to panels where all three judges have an identified ideology score. This higher rate of missing overlap is because the Judicial Common Space (2007) database is only available for the period 1953–2006. Since most of the missing data is due to the absence of information on judges prior to 1953, we have no reason to believe that this missing data biases the sample in any way.

[15] The regression includes only three-judge panels where there are no tied or missing scores. Appendix A.2.1 presents robustness checks of this result. Standard errors are clustered at the Circuit-year level since we think of the Circuit at a given year as our "experimental society".

Table 1
Ideology of verdict and ideology scores of panel members.

	(1) Verdict Ideology
Score	0.0309***
	(0.0118)
Panel Median	0.00243**
	(0.00109)
Score * Panel Median	0.0766***
	(0.0258)
Circuit-Year Fixed Effects	Y
N	23031
R-sq	0.101

Notes: Robust standard errors clustered at the circuit-year level in parentheses (* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$). Data come from the U.S. Courts of Appeals Database Project (1925–2002 5% Sample). Sample includes three-judge panels where there are no tied or missing scores. The dependent variable is verdict ideology, which is coded as 1 for conservative, 0 for mixed or not applicable, and −1 for liberal. Circuit by Year fixed effects are included.

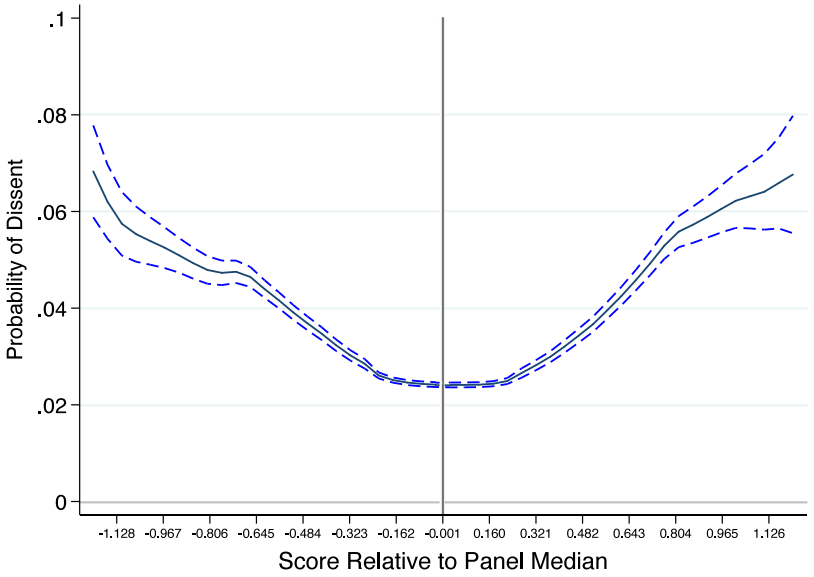

Fig. 2. Dissent and Ideology Score Relative to Panel Median – local polynomial.
Notes: x-axis: Ideology score of a judge demeaned by the median of the panel of judges assigned on the case. y-axis: Rate of dissent. The figure presents a local polynomial regression with an Epanechnikov kernel, where the dependent variable is rate of dissent. The dashed lines depict the 95% confidence interval. Data come from OpenJurist (1950–2007). Ideology scores come from the Judicial Common Space database.

Fig. 2 presents a non-parametric visualization of the Dissent Rate by ideology Score Relative to Panel Median[16] using a local polynomial regression (see Altman 1992 and Fan and Gijbels 1996). This figure reveals a clear pattern: the more a judge is distant from the panel median, the more likely she is to dissent. This holds both on the left and on the right. We present similar non-parametric visualizations for concurrences in Appendix Figure 6.

To test it in a regression specification, we regress (using a linear probability model) the Dissent and Concurrence of each judge-case combination on polynomials of the judge's Distance to the Panel Median.[17] We also add judge fixed effects (I_i) to ensure that the result is not driven by the ideology scores of judges per se. We further include Circuit by year fixed effects (CY_{ct}) and cluster

[16] Score Relative to Panel Median is the difference between a judge's score and the score of the panel's median. It is positive when the judge is more conservative than the median and negative when the judge is more liberal than the median.

[17] This is the absolute value of Score relative to panel median (it only takes positive values). It captures the strength of ideological disagreement of the judge with the most influential member on the panel.

Table 2
Dissent and ideological distance to median of panel.

	(1) Dissent	(2) Concur	(3) Dissent or Concur
Distance to Median of Panel	0.0238***	0.00667**	0.0259***
	(0.0049)	(0.00314)	(0.00597)
Distance^2	0.0143**	0.0104**	0.0204**
	(0.00691)	(0.00465)	(0.00855)
Judge Fixed Effects	Y	Y	Y
Circuit-Year Fixed Effects	Y	Y	Y
N	541163	541163	541163
R-sq	0.021	0.02	0.029

Notes: Robust standard errors clustered at the judge level in parentheses (* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$). Data on cases comes from OpenJurist (1950–2007). Ideology scores come from the Judicial Common Space database. Ideology scores are demeaned by the actual center of the panel of judges assigned on a case. The dependent variable is a dummy for whether a judge dissented (column 1) or concurred (column 2) in the panel. Fixed effects include circuit-year and judge.

the standard errors at the judge level. The basic regression specification is:

$$\begin{aligned}\textbf{Dissent}_{pcit} = \gamma_1 \textbf{Distance to Panel Median}_{pcit} + \\ \gamma_2 \textbf{Distance to Panel Median}^2_{pcit} + I_i + CY_{ct} + \nu_{pcit}\end{aligned} \tag{2}$$

for judge i on panel p in Circuit c at year t. Table 2 indicates that the frequency of both dissents and concurrences increases in the distance to the panel median, implying that ideological disagreement is a driver of dissent. Table A.5 in the appendix shows the result is robust to using a logistic specification instead.

Based on these results our second empirical finding is:

Finding 2: *A judge is more likely to dissent when the panel median is ideologically far from her.*

This result shows that in any single interaction, more disagreement creates confrontation. It is in line with previous observations in the literature (e.g., Wahlbeck et al. 1999, Spriggs et al. 1999 and Hettinger et al. 2004).

3.3. Which judges dissent the most?

We move now to our main research question: Are extremists more confrontational than others? To answer this question, instead of looking at single interactions (as in the previous section) we now look at choices made over many interactions and how these are affected by the society one is operating in. The ideal setting for testing whether operating in a society where one is ideologically different from its mainstream would be a randomized control trial that randomizes individuals into different societies, each with its own mainstream or cultural norm. The setting we have is a judge who is appointed to a Circuit Court, where we let the cultural norm be represented by the average ideology of the judges in that Circuit and year. It differs from the ideal in that judges are not truly randomized into a Circuit Court: Appointments are possible whenever previous judges retire. Our identifying assumption is thus that the decision to retire or accept an appointment is exogenous to the average ideology of the pool of judges in the time the decision is made (recall Section 2.1). Our main test consists of examining how a judge's ideological distance to this average ideology in the pool (the cultural norm) affects her choice of how often to dissent. One concern, given our focus on extreme judges, is measurement error in ideology. We address this concern by checking the robustness of our results when using another measure of being in ideological minority—the share of judges in a circuit that were appointed by a President from a different party than the judge's appointing President. Another concern would be that unobserved factors are associated at the same time with distance to the norm and with the dissent rate. We address this concern by including a large number of controls for judge characteristics. We further address this concern by adding a test where we track specifically the pattern of dissent of extreme judges (in terms of their distance to the average ideology in the pool), while exploiting the shift in the mainstream over the years. That is, we augment our main analysis with one that looks only at the group of judges who are at times throughout their career extreme with respect to their pool's average and at other times not. To this test we add judge fixed effects. Ideally, all judges would have been placed in different 'societies' so that each one would be in ideological minority at some point. In practice this does not happen, as the composition of judges within a Circuit Court shifts rather slowly. We are thus not able to use fixed effects for all judges, only for the analysis of those who are at some point extreme.

Starting with our main test, Fig. 3 presents a non-parametric visualization of a judge's yearly **Dissent Rate** by the ideology **Score Relative to Center of Judge Pool** using a local polynomial regression. Whenever we use this last variable (or its absolute value, termed Distance to Center of Judge Pool), we use the average center of pool over a calendar year.[18]

[18] The Center of Judge Pool is the average ideology score of the pool of judges (recalculated for each Circuit in each year). We need to use the average center of pool over a year because we use the yearly rate of dissent in our tests. Since the pool of judges available to be assigned to panels in a given Circuit Court changes very slowly, we can use the average location of the pool center over a year. For each Circuit in each year, each judge's score was recalculated to reflect her location relative to this average location of the center (see further details in Appendix A.1.2). In this way, Score Relative to Center of Judge Pool measures the ideological disagreement between a judge and all the peers she regularly interacts with.

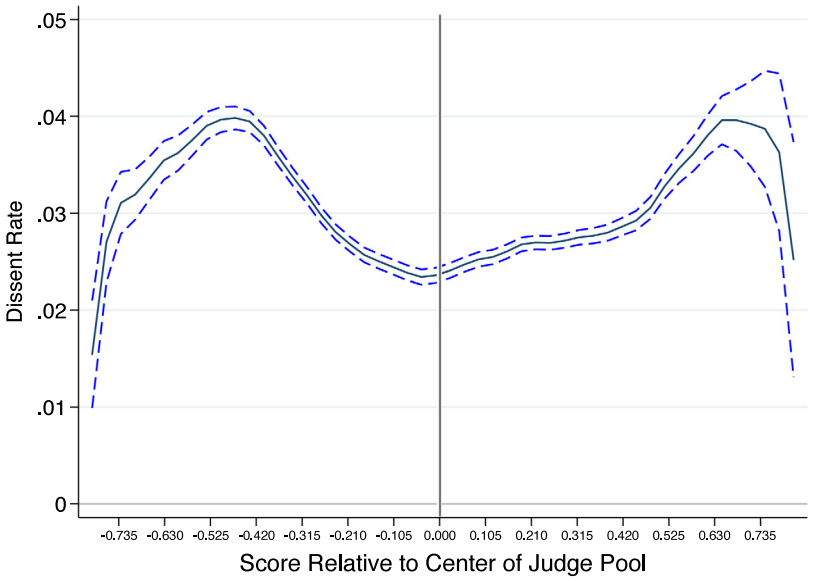

Fig. 3. Dissent and Ideology Score Relative to Center of Judge Pool - local polynomial.
Notes: x-axis: Ideology score of a judge demeaned by the average ideology of the *pool* of judges in a Circuit-year. y-axis: Rate of dissent. The figure presents a local polynomial regression with an Epanechnikov kernel, where the dependent variable is rate of dissent. The dashed lines depict the 95% confidence interval. Data come from OpenJurist (1950–2007). Ideology scores come from the Judicial Common Space database.

Intuitively, given Finding 2, one might expect that the more distant a judge is from the pool center, the more she will be inclined to write separate minority opinions (dissent or concur). But Fig. 3 reveals a surprising pattern: Starting from the left, the most extreme judges rarely dissent, then there is a marked increase in dissent as judges become more moderate, followed by a decrease in dissent rates towards the center of the judge pool. A similar pattern appears on the right. We will refer to this pattern as a *spider pattern*, due to the figure's resemblance of the body and legs of a spider. Appendix Figure 7 shows that the spider pattern is robust to residualizing by circuit and year fixed effects and presents a similar graph when grouping judges into 15 separate bins according to Score Relative to Center of Judge Pool.[19]

As further evidence for the spider pattern, Appendix Figure 7 presents the *Concurrence Rate* of judges according to Score Relative to Center of Judge Pool (local polynomial and bins).[20] Notably, the pattern of the spider is robust: Concurrence rates are surprisingly uncommon for the most extreme judges, the rate is higher for judges at moderate distance to the center and lower again for the judges at the very center (though here the pattern is less clear on the right). Finding these patterns for dissents and concurrences separately strengthens our confidence in these results.

We now test in a regression specification, how a judge's relative extremeness affects her propensity to confront. We regress the dissent and concurrence rate of each judge on polynomials of her distance to the center of the pool of judges in her Circuit-year. This is the absolute value of Score Relative to Center of Judge Pool (it only takes positive values). **Distance to Center of Judge Pool** is thus a measure of how extreme a judge is.

$$\begin{aligned}\textbf{Dissent Rate}_{cit} = \alpha + \gamma_1 \textbf{Distance to Center of Judge Pool}_{cit} + \\ \gamma_2 \textbf{Distance to Center of Judge Pool}^2_{cit} + C_c + T_t + \nu_{cit}\end{aligned} \tag{3}$$

for judge i in Circuit c and year t. Circuit and year fixed effects are represented by C_c and T_t and standard errors are clustered by Circuit-year. In other words, this model specification asks if a judge's yearly dissent rate is associated with the judge's ideological distance to the average ideology in the judge's Circuit in that year and whether the nature of this association is quadratic. We use a quadratic relationship because this pattern is suggested by the raw data, and we control for Circuit and year fixed effects because our treatment of interest (the "cultural norm") varies at the Circuit-year level. Table 3 indicates that the spider pattern is robust: According to the estimated linear and quadratic coefficients in the table, the maximum dissent+concur rate is obtained for Distance to Center of Judge Pool of 0.51, which is clearly within the bounds of our distribution, where the largest distance is 0.8.[21] Plugging

[19] Note that the share of judges having the same score (or range of scores) has no effect on the pattern of dissent rate. The pattern depicts the average dissent rate for each score, regardless of how many judges have this score, hence there is no distorting effect of weighting by a variable number of judges.

[20] We analyze concurrences separately from dissents in order to show the robustness of our results and because they are legally distinct. However, as both require writing a separate minority opinion, we bind them together in column (3) of Tables III and IV and in several robustness checks reported in the appendix, thus treating them as two alternative manifestations of the same thing: a judge's decision to confront her panel's majority opinion.

[21] If we separate dissents from concurrences, the peaks are obtained at 0.6 for dissents and 0.46 for concurrences, both within the bounds of our distribution. See Appendix Figure 2 for the distribution of Score Relative to Center of Judge Pool.

Table 3
Dissent and ideological Distance to Center of Judge Pool.

	(1) Dissent Rate	(2) Concur Rate	(3) Dissent or Concur Rate
Distance to Center of Judge Pool	0.0404***	0.0285***	0.0664***
	(0.00756)	(0.00570)	(0.0103)
Distance^2	−0.0334***	−0.0313***	−0.0649***
	(0.0118)	(0.00862)	(0.0156)
Circuit Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y
N	10043	10043	10043
R-sq	0.109	0.086	0.124

Notes: Robust standard errors clustered at the circuit-year level in parentheses (* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$). Data on cases comes from OpenJurist (1950–2007). Ideology scores come from the Judicial Common Space database. The main independent variable is (the absolute value of) ideology score demeaned by the average ideology of the pool of judges in a Circuit-year. The dependent variable is the judge's dissent rate (column 1) or concurrence rate (column 2) in a Circuit-year. Fixed effects include year and circuit. Observations are weighted by the number of votes cast by the judge in the Circuit-year.

these values of the locations of the peaks into the regression equation (using the specification of column 3), we get that the rate of dissent+concur is estimated to increase by 1.7 percentage points when moving from the center to the peak, and then to drop back by 0.6 percentage points.[22] Given the likely underestimation due to our ideology score being a proxy (see Fischman and Law 2009) and the underlying small rate of dissents and concurrences, this drop (whose size exceeds one third of the increase) is not negligible.[23] The visualization in Fig. 3, where the dissent rate estimated at the peaks is twice the size of that estimated at the extremes, is another indication of the sizable drop of the dissent rate at the edges.

To verify that the spider pattern is not driven by some distortion in the ideology score, we ran the same regression using an alternative ideology score—the party of appointing President. This score, in its raw form, does not distinguish between judges nominated by different Republican Presidents (all have a score of 1). Likewise it does not distinguish between judges nominated by different Democrat Presidents (all have a score of 0). To create a relative score based on this raw score we calculate the average ideology in the pool in a circuit-year and calculate a judge's distance to this average.[24] Hence, the relative score reflects whether a judges is in minority (a large absolute score) or in majority (a small absolute score). Table 4 shows the spider pattern is robust to using this alternative score. Furthermore, this score provides a very straightforward reinterpretation of the spider pattern. An "extremist" in this scoring system is simply a judge placed in a pool of judges in which a large majority of the judges were nominated by a President from the other party. Hence, the spider pattern when using this score clearly captures the tendency of judges to stay silent when they are in ideological minority, while behaving the most confrontationally when having a similar number of peers from their own party and from the other party.

This easy-to-interpret score enables us to further quantify and interpret the effect we find. Using the dissent+concur rate (column 3), we can compute that the peak is at 0.66. This means that, for a conservative judge, the dissent+concur rate increases by 2.4 percentage points when moving from an all-conservative pool to a pool that has 66% liberals, and then drops by 0.65 percentage points in an all-liberal pool (i.e., drops by about 27% of the increase).[25]

Additional robustness checks are reported in Appendix Tables A.6 to A.9. These address concerns of unobserved factors driving the results. Appendix Tables A.6 shows that the results are robust to weighting each judge equally (rather than according to the number of votes); dropping visiting judges; and using higher levels of aggregation (e.g., two-year or lifetime rates, where in the latter there is one observation per judge). They are also robust to including a cubic term of Distance to Center of Judge Pool, running Logit, including time-varying judge tenure interacted with a judge's ideology score and controlling for Distance to Supreme Court or Distance to Median of Panel (i.e., the pattern is not driven by interactions within particular panels). In Appendix Tables A.6, we also show that when the Distance to Center of Judge Pool is randomly re-assigned to another observation there is no relationship, which further mitigates the concern that the documented relationship is a statistical artifact or is driven by the level of clustering. Appendix Tables A.7 shows that the results are robust to dropping one Circuit at a time, thus mitigating the concern that the pattern is driven by a particular court or by outliers. Appendix Tables A.8 (columns 1 and 2) controls for a large set of

[22] The number 1.7 comes from using the Distance to Center of Judge Pool at the peak (0.51) and the coefficients from column (3) of Table 3, which yields $0.0664 * 0.51 - 0.0649\,(0.51)^2 \simeq 0.017$. The number 0.6 is then the difference (in percentage points) between this value of 0.017 at the peak and the value of $0.0664 * 0.8 - 0.0649\,(0.8)^2 \simeq 0.011$ at the end of the distribution, where Distance to Center of Judge Pool equals 0.8.

[23] We remind the reader that 8.5% of opinions in Openjurist have dissents and 6.4% have concurrences. After dividing by three (the number of judges in a panel), we get that the average rates of dissent and concurrence for a judge are both in the range of 2%–3%.

[24] For instance, a judge nominated by a Democrat President (that is, score 0) in a circuit-year consisting of a total of 8 Republican-nominated and 2 Democrat-nominated judges will get a relative score of $0 - \frac{(8*(+1)+2*0)}{10} = -0.8$. A Republican-nominated judge in that same pool will get a relative score of $1 - \frac{(8*(+1)+2*0)}{10} = 0.2$.

[25] The number 2.4 comes from using the Distance to Center of Judge Pool at the peak (0.66) and the coefficients from Table 4, which yields $0.0727 * 0.66 - 0.0552\,(0.66)^2 \simeq 0.024$. The number 0.65 is then the difference (in percentage points) between this value of 0.024 at the peak and the value of $0.0727 * 1 - 0.0552\,(1)^2 \simeq 0.0175$ at the end, where Distance to Center of Judge Pool equals 1 (an all-liberal pool).

Table 4
Dissent and alternative ideology score.

	(1) Dissent Rate	(2) Concur Rate	(3) Dissent or Concur Rate
Distance to Center of Judge Pool	0.0501***	0.0284***	0.0727***
Score Based on Party of Appointment	(0.0157)	(0.0107)	(0.0213)
Distance^2	−0.0367**	−0.0222*	−0.0552**
	(0.0164)	(0.0115)	(0.0222)
Circuit Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y
N	10033	10033	10033
R-sq	0.106	0.085	0.12

Notes: Robust standard errors clustered at the circuit-year level in parentheses (* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$). Data on cases comes from OpenJurist (1950–2007). Ideology scores are simply the party of appointment (Republican or Democrat, coded as 1 and 0). The main independent variable is (the absolute value of) ideology score demeaned by the average ideology of the pool of judges in a Circuit-year. The dependent variable is the judge's dissent rate (column 1) or concurrence rate (column 2) in a Circuit-year. Fixed effects include year and circuit. Observations are weighted by the number of votes cast by the judge in the Circuit-year.

personal characteristics of judges. Appendix Tables A.8 (columns 3 and 4) re-runs the main quadratic specification in Eq. (3) but using two forms of bootstrapping for extreme judges (since there are fewer such observations) and corroborates that the results (and their statistical significance) do not change. Appendix Tables A.8 (columns 5 and 6) shows that the pattern is robust to splitting the sample according to whether the case affirmed or reversed the lower court decision. Finally, Appendix Tables A.9 repeats the main specification using Circuit-year Fixed Effects instead and the results are qualitatively similar.[26] Based on these results we formulate the following empirical finding:

Finding 3: *There is a hill-shaped relationship between a judge's dissent rate and her ideological distance to the pool center.*

This result expresses that judges who are extreme relative to their greater group of peers are less confrontational than more moderately-distanced judges. It is novel to this paper and, to our knowledge, no paper in any domain has ever examined how being in ideological minority affects one's tendency to confront decisions of the majority. The result is particularly surprising given the earlier result that a judge who is in ideological minority rarely affects the verdict (Finding 1) and given that, at the level of a single interaction, confrontation is driven by ideological disagreement with this verdict (Finding 2). Yet extreme judges remain silent. In Appendix A.1.4 we show an important apparent implication of Finding 3: the silencing of extreme judges implies they end up having a less ideologically biased pattern of signed verdicts than moderates do.[27]

We wish to emphasize the following. Finding 3 is driven by a judge's ideology relative to her peers—the same judges who exhibit the low dissent rate when they are extremists, exhibit a high dissent rate when they are moderates relative to their pool. To further investigate the validity of this assertion, we proceed now to examine how the behavior of a given extremist judge changes when the average ideology in the pool changes, i.e. by including judge fixed effects. Table 5 reports the coefficients of a regression of Dissent Rate on polynomials of Distance to Center of Judge Pool with judge fixed effects, using a subsample that contains all the judges who, at a certain point of their career, have Distance to Center of Judge Pool greater than 0.6 (the location of the hump of regression specification (3), see Table 3). Table 5 clearly shows that the spider pattern holds for that subsample of "occasionally extreme" judges, indicating that these judges do not remain silent when they are placed in a pool that is ideologically closer to their bliss point (as reflected by the increasing part of the spider).[28] Moreover, as can been seen in Appendix Figure 8, the spider pattern is profoundly attenuated when considering the raw (i.e., not relative) Ideology Score. Hence, we can conclude that the non-confrontational behavior of extreme judges is not driven by their ideology per se or by some related personal characteristics but rather by regularly being in strong ideological disagreement with the society they are in—ideological interaction silences extremists.[29]

4. Theoretical model

How can these puzzling empirical observations be explained? In our quest to understand the observations we have considered 16 separate explanations representing the "usual suspects" within research on judicial and group decision making.[30] After analyzing

[26] Using Circuit-year Fixed Effects is not preferred over our main specification because it is equivalent to demeaning the explanatory variable (distance to the pool center) by its average in the pool. Thus, a pool that is mostly composed of judges distant to the pool center and another pool that is mostly composed of judges quite close to the pool center will end up looking similar in terms of their demeaned explanatory variable, while being different in terms of the implied dissent rate. In particular, due to the nonlinear shape of the pattern of dissent, collapsing together two such pools implies mixing the positive effect of increased ideological distance on dissent close to the pool center with the negative effect of a similar increase far from the pool center.

[27] Our main model (Section 4) can account for this finding too—see Appendix B.1.

[28] For judges who were never "extreme" at some point of their career, using judge fixed effects renders more measurement error (see Greene, 2018) and less meaningful variance to estimate the spider pattern.

[29] Recall also the reinterpretation of extremism as belonging to a partisan minority when using the alternative party-of-appointing-President score.

[30] We are grateful to the many researchers, seminar audiences and practitioners who have suggested explanations to consider.

Table 5
Dissent and ideological distance to center of Judge Pool for "extreme" judges, including judge fixed effects.

	(1) Dissent Rate	(2) Concur Rate	(3) Dissent or Concur Rate
Distance to Center of Judge Pool	0.0971***	0.102***	0.175***
	(0.0334)	(0.0291)	(0.0478)
Distance^2	−0.102***	−0.105***	−0.186***
	(0.0388)	(0.0303)	(0.0528)
Circuit Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y
Judge Fixed Effects	Y	Y	Y
N	1519	1519	1519
R-sq	0.425	0.343	0.442

Notes: Robust standard errors clustered at the circuit-year level in parentheses (* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$). Data on cases comes from OpenJurist (1950–2007). Sample of judges who are extreme relative to their pool at some point of their career (Distance to Center of Judge Pool greater than 0.6 (the location of the hump of regression specification). Ideology scores come from the Judicial Common Space database. The main independent variable is (the absolute value of) ideology score demeaned by the average ideology of the pool of judges in a Circuit-year. The dependent variable is the judge's dissent rate (column 1) or concurrence rate (column 2) in a Circuit-year. Fixed effects include year, circuit, and judge. Observations are weighted by the number of votes cast by the judge in the Circuit-year.

each explanation separately we are left with two separate explanations (or models) that can explain all three findings and do not violate some simple auxiliary empirical observations. One model is about judges using dissents instrumentally to awake the interest of the Supreme Court who may then reverse the verdict, and the other model is about judges using dissents to morally or emotionally distance themselves from verdicts they do not agree with ideologically. We take these two models and derive additional empirical predictions by which they differ and test them empirically (see Appendix D.1).[31] These tests favor the latter model (about moral/emotional distancing), which is hence presented here, while the other model (instrumental dissents) is presented in Appendix D.2.

The model presented here is inspired by, but is a simplified version of, Beim et al. (2014) and Cameron and Kornhauser (2009). We keep it as simple as possible in order to highlight the mechanism.[32]

There is a large *pool of judges* (formally, a continuum of infinitesimal judges with a unit mass). Each judge has an ideology score t which is public information. The judges' ideologies are drawn from a symmetric distribution F in $[-1, 1]$. There is a long sequence (a continuum) of judicial cases. For each case, three judges (t_1, t_2 and t_3) are randomly and independently drawn from the pool of judges to sit together on a *panel*.

The timing of the actions within each case is as follows. First, a case with characteristic y arrives, where y is drawn from the same distribution F.[33] Second, the three judges in the panel vote, in random order with majority rule, on whether the verdict $v(y)$ should be liberal ($v(y) = 0$) or conservative ($v(y) = 1$).[34] Letting $v_t(y)$ denote judge t's ideologically preferred verdict in a case with characteristic y, it is conservative ($v_t(y) = 1$) if $y < t$ and otherwise liberal ($v_t(y) = 0$). Third, each judge decides whether to sign the verdict or not, where not signing implies dissenting. Let $s(v(y); t)$ be an indicator function that equals 1 if judge t chooses to sign verdict $v(y)$ and equals 0 if she dissents. We assume (for simplicity) that the set of panel peers faced by judge t during her career is known in advance and is identical to the continuous distribution of two random judges drawn from the distribution of ideologies $F(t)$.

Whenever a judge disagrees with the verdict, she has to trade off the inner discomfort associated with actively approving the verdict by signing it, and the collegial pressure when choosing instead not to sign. The objective of the judge is to minimize the sum of these two costs. The inner discomfort is captured by the following cost function

$$D(x) = x^{\alpha}, \tag{4}$$

where

$$x \equiv \int_{-1}^{1} I(v_t(y) \neq v(y)) s(v(y); t) f(y)\, dy, \tag{5}$$

and $I\left(v_t(y) \neq v(y)\right)$ is an indicator function taking the value of 1 when the judge disagrees with the verdict. We assume $\alpha > 0$ so that D increases in x, which means the ideological cost is increasing in the number of verdicts a judge signs yet disagrees with.[35] D

[31] We use wartime, retired judges and newly appointed judges for these auxiliary checks.

[32] We can change it in a multitude of ways without changing the main results qualitatively. For instance, we abstract from the possibility that some cases are non-ideological. Adding such a component would generally smooth out the judges' actions so that the dissent rate of judges with different ideologies would be more similar and (to the extent that judges agree on such factual cases) lower the dissent rate.

[33] A simple special case is where both t and y are uniformly distributed in $[-1, 1]$.

[34] We use the word *vote* in the theory to represent deliberation within a panel. In practice this action is empirically unobservable.

[35] The inner discomfort function does not take into account how much the judge disagrees with the verdict, just whether she disagrees. We have also solved a more complex version of the model, available upon request, where judges care not only about whether the binary verdict misaligns with their preferences but

can be interpreted in two main ways: Either as a judge's own perceived cost of being part of a ruling she disagrees with; or as a loss when not standing up for the ideology of one's supporters or ideological faction. Letting this disutility depend on all cases captures the idea that judges are optimizing over their whole career. Put differently, the judge's reference point (or ambition) is signing only verdicts she agrees with. Then she perceives a cost based on the number of deviations from this reference point.[36] In total, a judge t has the loss function

$$L = D(x) + W P(t), \tag{6}$$

where

$$P(t) \equiv \int_{-1}^{1} (1 - s(v(y); t)) f(y) dy$$

is the judge's rate of dissent, and the last term in the loss function represents the cost arising from collegial pressure. W can also be interpreted as capturing the effort of writing a separate dissenting opinion. We let this cost be linear in the rate of dissent for tractability, thus W is the constant marginal cost of dissent. This simplifying assumption does not drive the qualitative results of the model.[37]

4.1. Model results

We will now present the model results and how they relate to the empirical findings. We focus on stationary strategies, i.e., where judges' actions are not history dependent. Quite clearly, a judge is going to sign all verdicts she agrees with, because doing so inflicts no cost while not signing results in collegial pressure. The crux of the analysis therefore lies in investigating which portion of the unfavorable verdicts $v(y) \neq v_t(y)$ a judge with ideology t chooses to sign and how this translates to the total dissent rate.

Findings 1 and 2 are, nearly trivially, predicted by the model. First, denoting the bliss point of the median judge of the panel by t_m and her ideologically preferred verdict for a case with characteristic y by $v_m(y)$, Finding 1 (the median's ideology has the strongest effect on the verdict) follows from the striving of each judge to minimize the number of verdicts she disagrees with.

Proposition 1 (*Finding 1*). *There exists an equilibrium with stationary strategies. In any such equilibrium,* $v(y) = v_m(y)$ *in all panels.*

Proof. See Appendix C.1. □

Second, given the voting outcome, it is clear that signing is always optimal for the median judge in the panel. As for the other judges in the panel, who might choose to dissent, the following proposition characterizes the relation between their choice of when to dissent and the ideology of the median judge in the panel.

Proposition 2 (*Finding 2*). *In any equilibrium with stationary strategies and for any single judge* t*, the probability that* t *dissents in a case weakly increases in* $|t - t_m|$.

Proof. See Appendix C.2. □

The model thus predicts that a judge is more likely to dissent the farther away her bliss point is from that of the median in the panel (Finding 2). This is unsurprising given that the chance of disagreeing with the verdict increases when the judge is far from the median.

Denote the actual probability of dissent of judge t by $P^*(t)$. To study the shape of $P^*(t)$ as a function of $|t|$, we first have to know how the frequency of the events that trigger dissent, $v(y) \neq v_t(y)$, changes with $|t|$. The following lemma states the intuitive result that this frequency increases in the extremeness of the judge's ideology.

Lemma 1. *In any equilibrium with stationary strategies,* $Prob(v(y) \neq v_t(y))$ *increases in* $|t|$.

Proof. See Appendix C.3. □

We are now ready to show our main result, namely that the model generates the spider pattern of Finding 3—a hill-shaped relationship between the Dissent Rate and the Distance to Center of Judge Pool.

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also about by how much it misaligns. The main qualitative results stay the same, in particular the conclusion that the inner discomfort has to be concave in order to produce the spider pattern of dissent. Since that alternative model is more elaborate, it allows for a smoother spider-pattern of dissent, in particular when the D function is mildly concave ($\alpha \in [1/3, 2/3]$).

[36] It should be noted that if a judge would optimize case by case (that is, the power would be applied to each deviation) then our main theoretical conclusions would still hold. However, an additional assumption would be needed, namely, that the collegial pressure (see below) is increasing in the extremeness of the judge. We prefer to avoid this extra assumption and we also find the assumption of case-by-case optimization less realistic, but we briefly refer to this alternative in Section 5.7.

[37] That is, the results hold qualitatively also for a convex or a slightly concave collegial pressure.

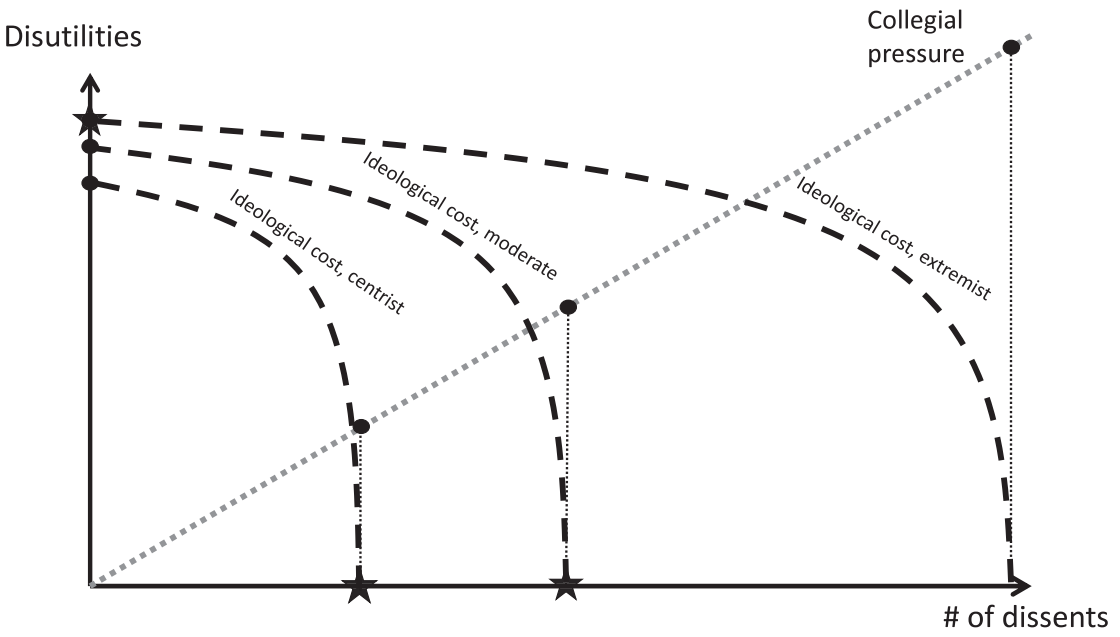

Fig. 4. Why a concave cost can generate a spider pattern.

Proposition 3 (*Finding 3*). *Consider an equilibrium with stationary strategies. For any* $\alpha < 1$ *there exists a range of* W *for which* $P^*(t)$ *is hill-shaped in* $[0, 1]$ *(and has a spider pattern in* $[-1, 1]$*). If* $\alpha \geq 1$*, a spider pattern cannot exist in equilibrium.*

Proof. See Appendix C.4. □

The proposition states that the ideological cost has to be concave for the spider pattern to hold. We will now explain why.

Fig. 4 depicts the optimal choices of each type of judge. On the horizontal axis we see the choice variable (number of dissents) and on the vertical axis the resulting utility loss, which is comprised of two parts. First, there is disutility from the collegial pressure, which is linearly increasing in the number of dissents (the gray dotted line). Second, there is ideological disutility, which equals zero if a judge dissents whenever she is not the median and then increases concavely (when $\alpha < 1$) as the judge lowers her rate of dissent by signing unfavorable verdicts (the black dashed lines). Since judges differ in how often they are median in a panel—where more centrist judges are more likely to be median—they will differ in the number of times they have to dissent in order to fully stick to their ideology. In the figure this implies that the ideological cost (the dashed line) of an extremist is further to the right than that of a moderate, which is further to the right than that of a centrist – the more extreme a judge is the more opportunities she has to dissent. Consequently, the ideological disutility associated with *never* dissenting (the point where the dashed lines meet the vertical axis) is the largest for an extremist and the smallest for a centrist, but the concavity of the ideological cost means they are not vastly different.[38]

The optimal choices of the three types of judges are depicted in Fig. 4 with stars. First note that when D (the dashed line) is concave, there is no point in signing only few unfavorable verdicts. This is since once a judge has signed a few such verdicts the ideological cost of signing more is very low. In order to reduce the ideological cost to any meaningful degree the judge has to never sign any verdict she disagrees with. We call this feature of the concave ideological cost "perfectionism" (as in Michaeli and Spiro 2015). This perfectionism drives judges to either always dissent when they disagree with the verdict (the point where the dashed line meets the horizontal axis), or to never dissent (the point where the dashed line meets the vertical axis).

Starting with the centrist judge, she optimizes when choosing to always stick to her ideology because this implies a small collegial pressure and no ideological cost, whereas any compromise she would make (by decreasing her number of dissents) would entail a large ideological cost due to perfectionism. This is true also for the moderate judge in the figure – the collegial pressure she endures for sticking to her ideology is still lower than the cost of never dissenting. However, since the moderate is less often the median of her panel, her choice to stick to her ideology implies she will have a higher dissent rate than the centrist will. This explains why, as a judge moves from being a centrist to being a moderate, the dissent rate goes up (the increasing part of the spider leg). Finally, an extremist judge who would stick to her ideology would face a much larger collegial pressure (see the rightmost point on the dotted line). Hence, she would rather give up on her ideology and just bear the ideological cost associated with never dissenting. Thus, the dissent rate falls sharply as a judge becomes sufficiently extreme. Overall, we get a hill-shaped relationship between a judge's

[38] In the corner case where the ideological cost is a step function, the ideological disutility associated with never dissenting is the same for all judges.

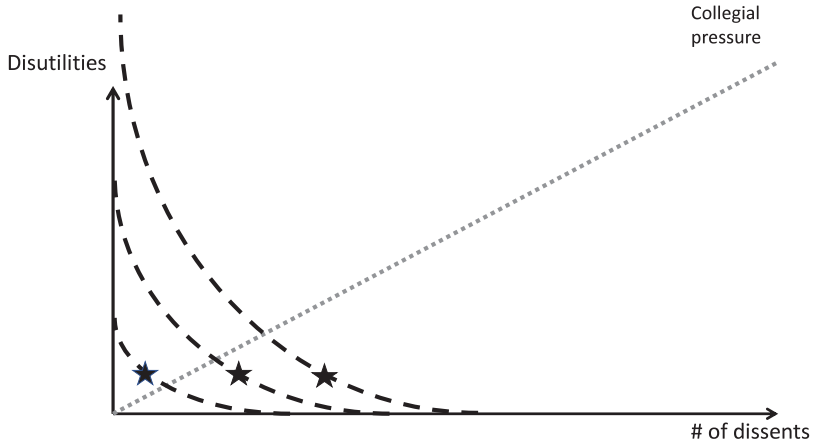

Fig. 5. Why a convex cost cannot generate a spider pattern.

dissent rate and how extreme she is relative to her peers in the pool of judges she interacts with over time. This hill-shape appears only if W is sufficiently large, as otherwise the collegial pressure would not be strong enough to make anyone silent. However, if W would be too large, no one would dissent, as that would be too costly. Hence, W has to be in an intermediate range.[39]

The above theoretical logic does not hold if the personal cost of bliss-point deviation were instead convex, as stated in the proposition and depicted in Fig. 5. The reason is that in this case each judge chooses an inner solution to the optimization problem (see the stars in the figure), where it is very costly for an extremist to dissent as seldom as a moderate or a centrist judge given the increasing marginal cost of ideological deviation.

5. Alternative mechanisms and their explanatory power

This subsection discusses in brief a number of alternative mechanisms and why they cannot be the explanation for the patterns we find empirically. One of the alternative explanations is omitted here, because it *can* explain our empirical patterns. This is the instrumental model mentioned earlier. This model is properly developed in Appendix D.2. We also derive predictions from this model, which differ from those of our main model, and test these predictions against each other (Appendix D.1). We find that the instrumental model is refuted by the data.

The other mechanisms can be divided into three categories (though many can fit under more than one category). The first category (see 5.1–5.5) consists of mechanisms that seem reasonable but ultimately fail to explain the main Finding 3 or are inconsistent with some other aspects of the data. The second group 5.6–5.9 consists of theories that can explain the empirical patterns only if judges have a concave cost of bliss point deviations, hence are basically variants of our main model. The final category 5.10–5.14 consists of potential threats to our empirical variables or results. Many of these are rebutted by the robustness checks in the empirical section (Section 3) but here we discuss further grounds for why some empirical concerns are not likely to be the reason for our empirical patterns. While this, of course, is not a final proof that our main model is correct, the long list of alternative explanations is meant to show that the "usual-suspect" mechanisms can be refuted as explanations for our observations (which of course does not mean that these mechanisms are not valid in general).

5.1. Signaling for extremeness

Mechanism: Judges aim to please voters or party members or those who selected them. Moderately ideological judges need to signal their ideological belonging while everyone knows already that extremists are extreme hence they do not need to use dissent to signal ideology. **Refutation**: (i) This does not explain why centrists dissent less than moderately ideological judges. Alternatively, it assumes that centrists, unlike moderates, do not want to signal they are extreme. (ii) Our results are driven by ideology relative to Center of Judge Pool and not by ideology per se and they hold also when using the alternative score based on party of appointing President (where a judge cannot be more "extreme", only more or less in minority). See more about signaling in Section 5.6.

[39] A smoother hill-shape pattern can be attained by letting the peer pressure be a convex rather than linear function of the number of dissents.

5.2. Bargaining

Mechanism: Through the bargaining process, extreme judges are more successful than moderately ideological judges in pulling the court's decision in their direction hence have less reasons to dissent. **Refutation**: This description is inconsistent with Appendix Figure 5 which, on the contrary, shows that at large distances from the center of the pool of judges there is a negative correlation between judges' ideology and the ideology of the verdict. It is also very implausible when considering the alternative ideological score (party of appointing President), because it would suggest that a Republican-nominated judge would have more bargaining power the larger is the share of Democrat-nominated judges in the pool.

5.3. Log-rolling

Mechanism: An extreme judge joins an unfavorable decision in return for getting the other judges to agree on the extremist's view in the next case. **Refutation**: This description is inconsistent with Appendix Figure 5 which, on the contrary, shows that at large distances from the center of the pool of judges there is a negative correlation between judges' ideology and the ideology of the verdict. If extreme judges refrain from dissenting in return for getting to determine future cases, then this influence should take away that negative correlation.

5.4. Tying the hands of the Supreme Court

Mechanism: Extreme judges sign the verdict in order to be able to add facts to it and thereby tie the hands of the Supreme Court. **Refutation**: (i) If extremists do this, then moderates may want to do this too. (ii) The facts added should increase the propensity of verdicts to be ideological, but this is inconsistent with Appendix Fig. 5 which, on the contrary, shows that at large distances from the center of the pool of judges there is a negative correlation between a judge's ideology and the ideology of the verdict.

5.5. Moderates as official party spokesmen

Mechanism: Moderate judges are the modal judges in their corresponding (liberal or conservative) group and are very close to their party leadership, while centrists and extremists are located at the tails of their party of affiliation. The moderates thus tend to signal the official party line and act accordingly by being vocal (i.e. dissent more and signal the party position on the issue). **Refutation**: (i) Fig. 1 shows a clear monotonic relationship between ideology of voting and a judge's ideology score that is not demeaned by the Center of Judge Pool. This is an indication that, abstracting from the censoring effect of the environment, extreme judges adopt a more ideological line than moderate judges. (ii) The judge fixed effects exercise in Section 3.3 shows that extreme judges are dissenting more when the pool changes so they become "moderates". So it cannot be that one type of judge is designated to be the main defender of the party line since (by the judge fixed effects exercise) this person changes behavior when the environment changes. (iii) Our results are robust to using party of appointing President as ideology score. Here, all judges in the pool who are from the same party get the same score, and "moderate" judges are simply (all) the judges who happen to sit in a well-balanced pool.

5.6. Signaling for conformity

Mechanism: A model where dissent is a signal of being an extremist (assuming this is bad) and where peer pressure is applied to judges based on the type they are perceived to be (in expectation in equilibrium) would imply extreme judges dissent less. **Refutation**: Bernheim (1994) shows this kind of model will produce dissent (non-conformity in his model) that is *increasing* in the extremeness of the type, hence cannot explain why extreme judges dissent less. This is unless, as Hallman and Spiro (2022) show, ideological costs are concave as is the case in our main model.

5.7. Peer pressure increases in extremeness of the dissenting opinion

Mechanism: Extreme minority opinions (dissents or concurrences) are sanctioned by other judges in the pool more heavily than moderate minority opinions are. Hence, an extremist judge will find it harder to express her true view by dissenting. **Refutation**: Extreme judges can always imitate moderate ideologists, thus dissent at least as much as (instead of less than) the moderates do. To make the extremists prefer to dissent strictly less than the moderates, judges must have a concave personal cost of bliss-point deviations also in this mechanism. This way, moderate judges, who are under small peer pressure, would choose to dissent and avoid the personal cost, while extreme judges, who are under severe social pressure, would pay the full personal cost and completely refrain from dissenting. It is thus clear that this mechanism is only a variant of our main model. We prefer our own model because it does not require the additional assumption of increasing social pressure and because we believe the personal cost is likely to apply to the *number* of dissents at least as much as it applies to the size of dissent.

5.8. Risk of impeachment

Mechanism: The risk of impeachment, given dissent, could be increasing in extremeness of the dissenting opinion. **Refutation**: Impeachment is essentially a form of pressure, hence the refutation in mechanism 5.7 applies.

5.9. Extreme dissents get fewer citations

Mechanism: Minority opinions that are very extreme get fewer citations hence are not worth the effort of writing. **Refutation**: We can see two reasons why a judge may want citations. The first is the value of simply being cited many times. Such a motive is devoid of ideology hence is silent on Finding 2. The second motive is ideological, where the purpose of the dissent is to improve the total ideological image of the particular case by moving the attention (citations) from a (subjectively) less favorable majority opinion to a more favorable minority opinion. However, to explain the observations, the judge's perceived cost of an unfavorable opinion getting cited has to be concave in the ideological distance of the opinion from the judge's bliss point, which makes it clear that this mechanism is essentially a variant of our main model where the dissent pattern is driven by concave ideological costs.[40]

5.10. Unobserved heterogeneity among judges

Mechanism: Extreme judges have some personal characteristics that are different from the others, and these characteristics make them dissent less. **Refutation**: (i) As mentioned earlier, our results are driven by ideology relative to Center of Judge Pool and not by ideology per se (as evident by using judge fixed effects in Section 3.3; the attenuation of Finding 3 and disappearance of the S-shaped voting pattern presented in A.1.4 when using raw ideology score; and the alternative score based on party of appointing President where a judge's ideology score only depends on her own party and the number of judges of the other party). That is, relative position is not a personal attribute, and when considering extremism per se the empirical patterns are weak to non-existent. (ii) Our results are robust to using controls for judge personal characteristics (Table A.8). (iii) The judge characteristics driving the result have to be positively correlated with ideology for extreme judges but negatively correlated for less extreme judges (since Finding 3 shows non-monotonicity).

5.11. Score bias

Mechanism: Our ideology score is constructed by the voting behavior of the appointing President and home state senators (see Section 2). This score may be flawed, e.g., if extreme Presidents appoint non-extreme judges to show they are non–biased. **Refutation**: (i) Fig. 1 shows an almost linear relationship between ideology of voting and judge's ideology score that is not demeaned by the Center of Judge Pool. This is an indication that the scoring system we use is indeed a good proxy of judges' ideology. (ii) The results are robust to the alternative ideology score based on party of appointing President, i.e., a score that is not dependent on how extreme the President is. (iii) This mechanism cannot explain non-monotonicity unless one assumes that moderately ideological Presidents for some reason do not at all need to signal that they are not biased.

5.12. Results driven by outliers

Mechanism: The result of low dissent rate for extreme judges could be driven by outliers. **Refutation**: (i) The pattern is robust to using concurrences rather than dissents (see Appendix Figure 7). (ii) There is a lower bound of dissent at zero, hence single outliers cannot pull down the average very much. (iii) We test robustness for outlier Circuits: Appendix Tables A.7 shows that the results are robust to dropping one Circuit at a time.

5.13. Random opinion writing

Mechanism: The opinion is written by a random judge who gets to decide its content, hence extreme judges are not under-represented among the judges who set the court's opinion. **Refutation**: (i) This cannot explain the spider. (ii) It is false since we show that the median is pivotal in determining the verdict (Finding 1).

5.14. Outlier circuits

Mechanism: The results are driven by a few circuits with many judges since only large circuits would have large enough variation in judges to include extremists. **Refutation**: (i) This cannot explain the spider. (ii) Appendix Tables A.7 shows that the results are robust to dropping one Circuit at a time.

[40] To see why this must be the case, note first that while it may be true that extreme opinions are cited less, an extremist can always write less extreme dissents thereby increasing her citations (essentially emulating the moderate). Suppose now that a moderate chooses to write a moderate dissent while the extremist does not (a necessary, but not sufficient, condition for the moderate's dissent rate to be higher than the extremist's dissent rate). Then it must be that the moderate thinks the ideological utility increases substantially (at least sufficiently to be worth the writing effort) when moving attention from, say, a centrist opinion to a moderate one, but that the extremist does not think there is a large utility difference when doing precisely the same. Following the same intuition of our main model, this means that the judge's perceived cost of an unfavorable opinion getting cited has to be concave in the ideological distance of the opinion from the judge's bliss point.

6. Conclusions and discussion

We study a high-stakes setting, the U.S. Courts of Appeals, where decisions have an ideological element and judges are repeatedly randomly assigned into panels of three. In this setting, we present a consistent and robust set of evidence that suggests that judges with non-mainstream world views ("extremists") are less confrontational, despite being less likely to affect the outcome of the cases. Our findings further show that the results are not driven by having extreme ideology per se but rather by being extreme relative to the people one interacts with over time. Hence, interaction between individuals who disagree ideologically silences those who regularly find themselves far from the mainstream. This may hide undercurrents of dissatisfaction, distort the perception of the distribution of views and create false impressions of consensus where it is absent.

We can think of a Circuit Court as a 'society' consisting of several individuals. Each judicial case, with its corresponding panel of judges, then represents a single interaction within that greater society. Each individual is forced to endure several such (randomly assigned) interactions. Our results imply that in single interactions, the median person will be decisive, and differences will be a cause of confrontation. But in society as a whole, the most extreme individuals will be the least prone to confrontation – they are silenced. With this interpretation, and to the extent that the results generalize to other settings where ideology is salient, our findings may have important implications, e.g., for the expected behavior of immigrants vis-á-vis native society, for individual differences in confronting social and religious norms, and for which factions of society are expected to publicly question the consensus. More narrowly, our results also contribute to the discussion of the balance of powers by raising counter-majoritarian concerns among democracy theorists who advocate the premise that judges should reflect the preferences of the executive branch at the time of their appointment without censoring themselves. Our results show that ideologically extreme nominations will not represent the executive that nominated them.

The quantitative results are sizeable. Based on our main measurement of ideology, an extreme judge dissents or concurs about half as often as a somewhat more moderate judge. A 'social planner' who wants his nominated judges to stand their ground, should therefore be careful in appointing judges to Circuits where their ideology is expected to be far from the mainstream. The silencing of extremists is not a marginal phenomenon either: There is a non-negligible number of "sufficiently extreme" judges. Based on the patterns in the data, the probability that a judge is sufficiently extreme to be beyond the point where silencing starts having an effect is roughly 14% (in terms of dissents) and 24% (in terms of concurrences).[41] This is even more striking if we consider our alternative score, based on party of appointing President. It is enough that a Democrat-nominated judge is in a Circuit in which two thirds of the judges where nominated by a Republican President for the silencing to start having an effect on that "Democrat" judge (and vice versa for Republican-nominated judges). This suggests that, if silencing of views is considered a problem, then ensuring a more even nomination across parties and Circuits could be a good policy. This has already been discussed with respect to the Supreme Court, and our results suggest that such amendments of the rules may be valuable also for the Circuit Courts. For example, Epps and Sitaraman (2019) propose to achieve balance on SCOTUS by a 15-justice Court made up of five Democrats, five Republicans, and five justices chosen by the other 10. In the Circuit Courts this could be implemented as well (in terms of the proportions of judges nominated by each side). Epps and Sitaraman (2019) also propose rotating Appeals judges to SCOTUS. In the Circuit Courts this could be implemented by rotating judges from districts. This would break the "society" aspect of the court, which we show is crucial for the caving in of relative extremists. A third proposal is to use *term limits*—requiring each justice to step down after 18 years. In the Circuit Courts this could be implemented too, and might lead to a more even flow of vacancies and thus a more even distribution of ideologies.

To rationalize our empirical observations, we present a simple model of judicial decision making in panels, where dissenting judges are subject to collegial pressure. This model suggests that the non-confrontational behavior of extreme judges is due to the concavity of ideological preferences (ideological perfectionism), which makes them cave in under peer pressure instead of just compromising a little bit, as would have been the case if the ideological cost were convex. Meanwhile, a concave ideological cost induces moderately ideological judges to stand their ground whenever they disagree with a case's outcome and hence appear more confrontational. A large number of alternative models are further considered. In particular, a competing model about dissent as a way of drawing the attention of the Supreme Court is analyzed and rejected empirically. Our theoretical finding thus suggests that the cost of deviating from one's principles are concave.

Interpreted through the lens of economic theory, concave ideological costs can have far-reaching implications for the empirical predictions of political-economy models. Concavity can drive polarization in political platforms (Osborne 1995; Kamada and Kojima 2014). Concave ideological costs can also affect socially optimal policy in that, when trying to bridge differences of opinion, disagreeing agents should each get to decide on a subset of issues rather than compromise within each debated issue (Eguia 2013). The concavity of costs associated with deviations from a moral or political bliss point also affects the sustainability of biased norms, the pattern of revolutions, and the likelihood of conflict (Michaeli and Spiro 2016; Michaeli and Spiro 2017; Gratton and Klose 2017). While many of these models have assumed concave ideological costs and derived predictions, we complement the laboratory evidence and show empirically that these predictions hold up in the field. Given the wide array of applications here and elsewhere in political economy, more empirical research into the curvature of moral and ideological costs in various field settings is warranted.

Appendices A–D. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.euroecorev.2023.104521.

[41] This calculation is based on the fraction of observations that are beyond the peaks of the dissent and concurrence rates, where the maximum dissent rate is obtained for Distance to Center of Judge Pool of 0.6 for dissents and 0.46 for concurrences.

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