ISSN 1745-8587

Birkbeck Centre for Applied Macroeconomics

BCAM 2105

Polarization and Political Selection

Tinghua Yu
Birkbeck, University of London

Elliott Ash
ETH Zurich

March 2021

Polarization and Political Selection

Tinghua Yu & Elliott Ash*

November 11, 2019

Abstract

Does political polarization among voters affect the quality of elected officials? We examine the question both theoretically and empirically in the context where expertise and intrinsic motivation are crucial determinants of the quality. In our model, high quality candidates prefer to spend time on their current careers over electoral campaigning. In a polarized electorate, however, voters cast their votes mainly based on candidates' party affiliations, reducing electoral campaign effort in equilibrium. Hence under higher polarization among voters, higher quality candidates are more likely to run for high office and to get elected. Our testable prediction is that electorates with higher polarization select candidates who perform better. We take the predictions to data on judges' performance constructed from the opinions of all state supreme court judges working between 1965 and 1994. We find that judges who joined the court when polarization was high write higher-quality decisions (receiving more citations from other judges) than judges who joined when polarization was low.

1 Introduction

Most studies of the effect of political polarization on governance emphasize how it affects the behavior of elected officials once they are elected, with political polarization being

*Tinghua Yu (corresponding author): t.yu5@lse.ac.uk; Department of Government and School of Public Policy, London School of Economics and Political Science; Elliott Ash: ashe@ethz.ch; Department of Social Sciences, ETH Zurich. We thank Daniel Berliner, Andy Guess, John Huber, John Marshall, Massimo Morelli, Tara Slough, Stephane Wolton, and Noam Yuchtman for helpful suggestions on previous drafts.

linked to policy gridlock and decreased legislative productivity (Mann and Ornstein, 2016; McCarty, 2007;McCarty et al., 2016). But we should also expect that political polarization affects the types of individuals who choose to run for office in the first place. This paper develops a theory and tests its prediction that political polarization could in fact enhance the quality of elected officials, and thus contribute to good governance.

In our model of electoral competition, potential candidates with heterogeneous quality and ideology decide whether to bid for the party nomination or stay in their current careers. There are two parties with fixed ideological positions. Potential candidates share their affiliate party's ideological position but vary in their quality. Among the candidates who bid for the party nomination, parties randomly nominate their candidates.[1] Then nominated candidates from two parties compete for votes in the electoral campaign. Campaign effort is costly but has a positive effect on the probability a voter votes for the candidate.

In the model, voters are assumed to cast their votes based on candidates' campaign efforts and their party affiliations. Candidates expend resources to increase their own vote share and suppress the vote share of other candidates. Resources are needed for access to media, acquiring name recognition, etc. Campaign effort is thus viewed as valence in the model.[2]

Electoral campaigns take time and effort. A key ingredient in the model is that the opportunity cost of campaign is larger for high quality candidates. Expertise and

[1]Similar to Snyder Jr and Ting (2002), we regard political parties as informative brands to voters and not as strategic players in our model.

[2]This interpretation is similar to Erikson and Palfrey (2000) and Ashworth and Bueno De Mesquita (2009). Another view of the electoral campaign takes an informational perspective. Coate (2004) views campaigns as providing voters with information about candidates' ideologies. In Prat (2002), the campaign message itself is not informative to voters yet the interest groups' campaign contribution provides information about the candidate's quality. In addition to valence perspectives and informational perspectives, Baron (1994) considers the role of campaigns at influencing uninformed voters to vote for one or the other candidate. Herrera et al. (2008) focus on the mobilization effect of electoral campaign. Carter and Patty (2015),Prato and Wolton (2016), Prato and Wolton (2018) and Prato and Wolton (2019) consider campaigning as costly effort to communicate the position to the electorate.

intrinsic motivation are key determinants of the quality. A candidate with high level of expertise can perform better in the current career given the same amount of time. A candidate who is intrinsically motivated has a stronger preference to spend time on their current careers. Electoral campaigns thus discourage high quality candidates from running for office.

The next ingredient is the polarization among the electorate. As polarization increases, the competition in the campaign softens.[3] The reduced competition in the campaign, in turn, reduces campaign costs. The key prediction from the model, then, is that as polarization increases, high quality candidates bid for the party nomination. This leads to higher quality candidates competing in elections, and therefore higher quality officials on average once in office. A testable prediction is that candidates elected in polarized times have better performance.

We take the prediction to data on judges' performance constructed from the opinions of all state supreme court judges working between 1965 and 1994. These courts are an ideal context to test the hypothesis from our modelbecause judges perform tasks where legal expertise and intrinsic motivation are key factors in the quality of their performance. State supreme court judges and judicial candidates tend to join the court in their fifties after an established career in the legal profession. In many states, supreme court judges are selected by partisan elections. Judicial candidates represent a political party, Republican or Democrat, that is identified on the ballot.[4]

A desirable feature of state supreme court judges is that we can produce valid measures of work quality. Because state supreme court judges clarify and in some cases

[3]Ashworth and Bueno De Mesquita (2009) predicts the same result.

[4]In addition to the partisan election system, there are other types of systems to select state supreme court judges. In nonpartisan elections, the judicial candidates' partisan affiliations are not specified in the ballot. In merit systems, a commission submits a set of candidates from which the governor selects an appointee. The appointed judge then faces retention elections, which are not contestable but require a certain percentage of the vote in order to retain office. In governor selection system, judges are appointed and reappointed by the governor.

create new law, we can measure quality by the frequency with which the decisions of a judge are cited in future cases (Choi et al., 2010; Ash and MacLeod, 2015). This is a nice feature of our empirical context that would be unavailable in most other public positions, such as regulators (Besley and Coate, 2003). Specifically, we measure decision quality as the number of positive (non-critical) citations to a judge's opinions in a given year.

Our measure of voter polarization across states and time comes from Caughey et al. (2016). The measure is based on the ideological distance between the expected Democrat and expected Republican voter in the state public in a year, using estimates of mass-level economic policy liberalism constructed from polls. For the analysis, we link each state supreme court judge to the level of voter polarization in the year the judge took office.

To identify the effect of polarization on judicial performance, we compare judges working on the same court at the same time, but who took office under different levels of voter polarization. Our regressions include court-year fixed effects, and therefore our estimates summarize the within-court-year effect of higher starting-year polarization on current-year decision quality. The specification holds constant current-year polarization and any other factors affecting all of a court's judges equally. In addition, we include cohort fixed effects (to account for differences across cohorts in polarization and quality) and state-specific cohort trends (to account for confounding trends at the state level in polarization and quality). In specification checks we include judge covariates such as experience and case covariates such as legal topic which might drive citations.

Our main result is that judges selected in more polarized years write higher-quality decisions than same-court colleagues selected in less polarized years. The effect is seen under partisan elections but not under other selection systems (nonpartisan elections, uncontested elections, or governor selection). The effect is not driven by polarized

judges having a different-size caseload, or deciding different types of cases from their colleagues. We see a similar result on a more inclusive measure of quality (all citations, not just positive ones), and on more exclusive measures of quality (where the citing judge specifically discussed or directly quoted the opinion, or where the citing judge is in another state and therefore citing persuasive rather than binding precent).

These findings suggest that political polarization might contribute to good governance through the entry decision of high quality candidates. In our theory, the quality of the elected officials is the key factor in the performance of the office. This condition applies to contexts where the performance of high-quality officials are less constrained by the institutional environment. Besides elected judges (our setting), such contexts include elected prosecutors, elected regulators, and other technocratic offices. Moving beyond elected technocrats, our theory has relevance to positions in lower-tier governments (e.g. village level) that are in charge of public service delivery.

The paper contributes to the large theoretical and empirical literature on political polarization. This literature has taken two main approaches. The first approach has focused on voters' political ideology and studied the change in political ideologies among voters (see Fiorina et al. (2005), Fiorina and Abrams (2008), Abramowitz and Saunders (1998), Abramowitz and Saunders (2008), and Caughey et al. (2016) among others). The second approach has focused on changes in legislative behavior and examined how a range of factors contribute to legislative polarization. These factors include economic and social changes (McCarty et al., 2016), developments in the media environment (Prior, 2007), and features of electoral processes such as redistricting (McCarty et al., 2009; Carson et al., 2007), primary elections (Hirano et al., 2010; McGhee et al., 2014), and campaign finance (Ansolabehere et al., 2003; Barber, 2016). Policy gridlock and decreased legislative productivity are the main consequences of polarization examined in this literature (Mann and Ornstein, 2016; McCarty, 2007;McCarty et al., 2016).

Both approaches assume that regardless of changes in voters' political ideology or legislative behavior, the pool of candidates who run for election is the same. Our contribution is to consider the missing component of candidate entry in the literature on polarization literature. Complementary with our analysis, Hall (2019) examines how candidate supply contributes to legislative polarization (while we study how voter polarization affects candidate supply). Some theory work demonstrates that candidate quality and performance will have less impact on electoral outcomes as political polarization increases (Padró i Miquel, 2007; Besley et al., 2005).

Besides the literature on political polarization, this paper adds to the literature on the determinants of the quality of public officials. The previous theoretical works mainly consider quality as competence. Caselli and Morelli (2004) argue that low-competence citizens have a 'comparative advantage' in pursuing elective office, because their market wages are lower than those of high-competence citizens. In Mattozzi and Merlo (2008), considering that office displays one's skill, citizens choose whether to enter or stay in political office. Acemoglu et al. (2010) show that the veto power of the incumbent members of government could be a source of inefficiency in selecting competent citizens into government. Different from the previous theoretical work, our focus is on variation in expertise.

The empirical literature on political selection is mainly on legislators, while our focus is on technical offices where expertise is crucial for the quality. Empirical studies on political selection of legislators show that various factors affect the quality of politicians – including intra-party competition (Besley et al., 2017), inter-party competition (Banerjee and Pande, 2007), and wages (Dal Bó et al., 2013). Moreover, most of the research measures the quality of the public officials by their attributes including education and earnings. We contribute to the literature by measuring the quality of the work directly.

In what follows we first describe the theory. Then we present the empirical results. The final section concludes.

2 Theory

This section outlines our theoretical framework.

2.1 Model-Setup

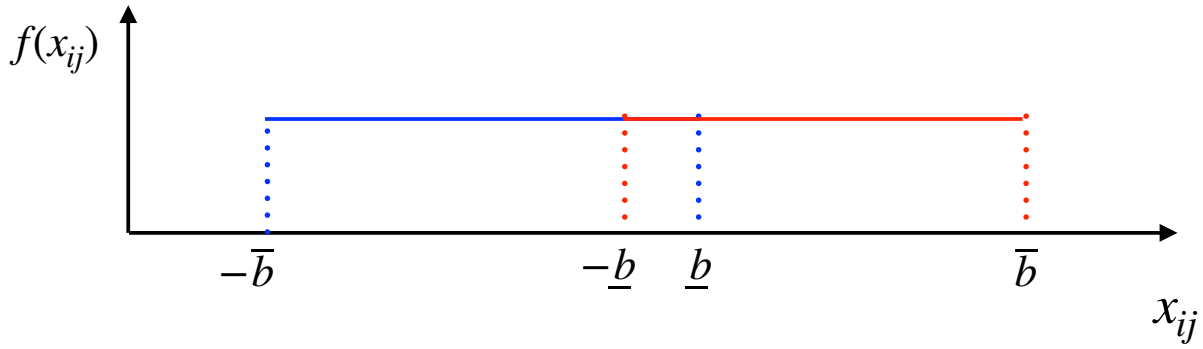
There are two kinds of players: voters and potential candidates.

2.1.1 Voters

There are n voters. Voters are affiliated with one of two parties: party L and party R. Parties are not strategic players but are characterized by a one-dimensional left-right ideological spectrum. They are assumed to have the same number of voters (to help focus on polarization). Let the ideology of voter iL in party L be x_{iL}, distributed uniformly on interval $[-\overline{b}, \underline{b},]$. The average ideology among voters in party L is $z_L = (\underline{b} - \overline{b})/2$. Correspondingly, voter iR in party R has ideology x_{iR}, distributed uniformly along $[-\underline{b}, \overline{b}]$. The average ideology in party R is $z_R = (\overline{b} - \underline{b})/2$. Let d be the difference between the average ideologies of two parties. $d \equiv z_R - z_L$. We assume $0 < \underline{b} < \overline{b}$, ensuring that the rightist voter in party L is to the left of the rightist voter in party R. So we can associate L with "left" and R with "right". Figure 2.1 shows the distribution of voters' ideologies.

Voters choose between the candidates of each party $J \in \{L, R\}$. Candidate J commits to adopting z_J as the policy platform. Candidate J's campaign effort, denoted by a_J, has a positive effect on voters from both parties. Voter ij with ideology x_{ij} receives the following utility when candidate L or candidate R is in office, respectively:

Figure 2.1: Distribution of Voters' Ideologies



Notes. x_{iL} follows a uniform distribution over the interval $[-\overline{b}, \underline{b},]$. x_{iR} follows a uniform distribution over the interval $[-\underline{b}, \overline{b}]$

$$u_{ij}^{L} = -(x_{ij} - \epsilon_{ij} - z_L)^2 + a_L$$
$$u_{ij}^{R} = -(x_{ij} - \epsilon_{ij} - z_R)^2 + a_R.$$

Voter ij votes for candidate L if $u_{ij}^{L} \geq u_{ij}^{R}$ and for candidate R otherwise. The ideological shock ϵ_{ij} is distributed uniformly along the interval $(-\frac{1}{2\delta}, \frac{1}{2\delta})$, $\delta > 1/2$. This means that from the candidates' choice perspective the electoral outcome is a random event. The candidate who wins the majority of votes is then elected to office.

2.1.2 Potential Candidates

We focus on offices for which expertise is a crucial determinant of work quality. Due to the expertise requirement, our candidates are drawn from a population of *professionals* in the relevant practice area. For example, in the area of legal practice, a law professor would be considered a legal professional in the private sector. Seeking public office would be running for election as a state supreme court judge. A professional who is affiliated

with party J shares the average ideology of the affiliated party z_J. Professionals decide whether to bid for the nomination by her affiliated party. Party J randomly picks one among the affiliated professionals who bid for the nomination to be its nominee.[5]

For each party J, there is a mass m of affiliated professionals with quality level λ, distributed uniformly on $[0, \overline{\lambda}]$. The cost of effort into their practice is $c_t = e_t^2/(2\lambda)$. We could interpret λ as the level of expertise. Outcome is linear in one's effort into the practice: $v_t = e_t$.

In stage 1, a professional can decide whether to bid for the nomination by her affiliated party or stay at her current practice. Bidding for the party nomination is costless, but campaigning requires effort. If a professional is not the nominee, she stays in current practice and puts an effort $e_1 > 0$ into the practice. If selected as the nominee, the candidate exerts effort $a_J > 0$ in the electoral campaign. The cost of campaign effort is $c_J = a_J^2/2$. Obtaining office accrues a reward α, $\alpha \in (\frac{2d}{\delta^2}(d - \sqrt{d^2 - \delta^2}), \frac{4d^2}{\delta^2})$. [6]

Notice that the quality (expertise or intrinsic motivation) parameter λ doesn't enter into the function of electoral campaign cost. Expertise in our framework is profession-related expertise, not the kind that allows one to campaign more effectively.

In stage 2, professionals (including the elected official) decide effort in their practices.

2.1.3 Timing

In stage 1,

1. **Candidate nomination bids**. Professionals choose whether to bid for the candidacy of their affiliated party.

[5] Alternatively, we could assume that the ideology of a professional affiliated with party L (R) is distributed uniformly on interval $[-\overline{b}, \underline{b},]$ ($[-\underline{b}, \overline{b}]$). Because parties pick their candidates randomly among the ones who bid for nominations, from voters' perspectives the expected ideology of party J's candidate is z_J. The results still hold under the alternative assumption.

[6] This assumption is to ensure the existence of the interior solution to the campaign effort and interior solution to the upper bound of candidates' intrinsic motivation.

2. **Candidate selection**. Nature randomly selects the party's candidate.

3. **Practice effort**. Professionals who are not the nominee of their party decide effort in their current professional practice.

4. **Campaign**. Party J's nominated candidate decides the campaign effort a_J.

5. **Voting**. The winner is decided by plurality rule.

In stage 2,

- Professionals put effort e_2 in professional practices.

2.2 Model-Results

We look for subgame-perfect equilibria (SPE). We start with professionals' second-stage decisions and then electoral competition in stage 1. In stage 1, we first solve the voter's voting decision, then the candidates' campaign effort. Finally, we discuss the professionals' decisions to run. We impose a robustness requirement where potential candidates behave as if the candidate pool were finite. This requirement simplifies the analysis because there are an infinite number of potential candidates and the probability of being selected to be a candidate is zero. [7]

2.2.1 Practicing in stage 2

In stage 2, the elected official works in public office and other professionals work in respective practice areas. A professional puts effort e_2 in her practice to maximize

[7] Alternatively, we could assume the following timing in stage 1. 1) Party offers nomination. Nature randomly offers the nomination to professionals. 2) The professional who gets the offer decides whether to accept the offer and become the party nominee. Afterward, the timing follows the one in the model. We look for subgame-perfect equilibrium. We focus on professionals' decisions to accept the party nomination. This alternative model gives similar insights.

$$\max_{e_2} e_2 - e_2^2/(2\lambda)$$

The optimal effort level is $e_2^* = \lambda$. She makes a payoff of $v_2(\lambda) \equiv \lambda/2$ in stage 2. It is increasing in the quality level λ. As λ becomes higher either due to expertise or intrinsic motivation, one puts more effort and enjoys higher value from the practice.

2.2.2 Voting

Voters make decisions after observing campaign effort a_L by candidate L and a_R by candidate R. Voters know that candidate J commits to policy platform z_J. The swing voter in party J is a voter whose ideology x_J makes him indifferent between the two candidates. The swing-voter ideology is

$$x_J = \frac{(a_L - a_R)}{2(z_R - z_L)} + \epsilon = \frac{(a_L - a_R)}{2d} + \epsilon.$$

Because candidates adopt the mean ideology of voters in their respective parties, as polarization among voters increases, the candidates' policy platform diverge. When the candidates' policy platform diverge, campaign effort has a weaker impact on the swing voter's ideology. Therefore, polarization among voters decreases the impact of campaign effort on the swing voters' ideology. All voters in group J with an ideology to the left of the swing voter in group J (i.e. $x_{iJ} \leq x_J$) vote for the candidate of party L. Candidate L's vote share thus is

$$\pi_L = \frac{(a_L - a_R)}{2(\underline{b} + \overline{b})d} + \frac{\epsilon}{\underline{b} + \overline{b}} + \frac{1}{2}$$

with an analogous expression for candidate R.

The winner is by plurality rule. Candidate L's probability of winning is

$$p_L = \Pr[\pi_L \geq 1/2] = \frac{1}{2} + \delta \frac{(a_L - a_R)}{2d}$$

and Candidate R's probability of winning is $p_R = 1 - p_L$.

The marginal effect of campaign effort a_L on candidate L's winning probability is decreasing in ideological polarization d. As polarization increases, more voters will vote based on party affiliations, while fewer voters will be influenced by campaign effort. The marginal effect of campaign effort on one's winning probability thus decreases.

2.2.3 Polarization and Campaign

Expecting the voters' decision, candidate J chooses campaign effort a_J to maximize the following expected utility.

$$\max_{a_J} p_J \alpha - {a_J}^2/2$$

Notice that because we refer to expertise as quality, candidate J's quality doesn't affect the campaign outcome. We summarize the equilibrium level of campaign effort in the following proposition.

Proposition 1. *The equilibrium level of campaign effort* $a_L^* = a_R^* = \frac{\delta\alpha}{2d}$.

This is chosen by both parties. As polarization increases, the marginal effect of campaign effort on the probability of winning election decreases. Therefore, as polarization increases, campaign effort in equilibrium decreases.

2.2.4 Polarization and Quality of Candidates

Bidding for the party nomination is costless. If a potential candidate who bids for party nomination is not selected to be a nominee, she gets back to her practice. Moreover, we

impose a robustness requirement where a potential candidate behaves as if the candidate pool were finite. Therefore, to decide whether to bid for the party nomination, potential candidate compares the expected value of running for office if she were picked as party nominee and the expected value of staying in current practice.

If a potential candidateruns as the candidate of her affiliated party, she expects to win with probability 1/2. If she wins, she receives a net payoff of $\alpha + v_2(\lambda) - c(a_J^*)$ over the two stages. If she loses, she works in the current profession receiving a payoff of $v_2(\lambda)$. The expected value from running for office is thus $\frac{1}{2}\alpha + v_2(\lambda) - c(a_J^*)$. When polarization increases, campaign effort a_J^* decreases, and thus running for office offers a higher value.

If a potential candidate stays in current practice, she spends effort e_1 in stage 1. Her maximization problem is the same as the maximization problem in stage 2. The optimal level of effort in stage t is thus $e_t^* = \lambda$. She makes a payoff of $v_t(\lambda) \equiv \lambda/2$ in stage t. Therefore the value from staying at current practice over the two stages is $v_1(\lambda) + v_2(\lambda) = \lambda$.

When the value from running for office over the two stages is greater than the value from staying at current practice over two stages, a potential candidate bids for the nomination. That is, when the following condition holds:

$$\frac{1}{2}\alpha + v_2(\lambda) - c(a_J^*) > v_1(\lambda) + v_2(\lambda)$$

which simplifies to

$$\frac{\alpha}{2} > v_1(\lambda) + c(a_J^*)$$

The benefit of running is the expected office value $\alpha/2$. The cost of running is the campaign effort $c(a_J^*)$ and the opportunity cost $v_1(\lambda)$ of giving up practicing in stage 1.

The opportunity cost is increasing in the level of quality. For potential candidates with lower quality, the opportunity cost is lower. Therefore, potential candidates with lower quality have more incentives to run. Polarization leads to a lower campaign cost and thus attracts higher quality professionals to run. We summarize a potential candidate's decision to bid for nomination as follows.

Proposition 2. *A potential candidate with quality level*

$$\lambda < \hat{\lambda} \equiv \alpha - (\frac{\delta\alpha}{2d})^2$$

bids for the party nomination to run for a office. The expected quality level of elected official, $\hat{\lambda}/2$*, is increasing with voter polarization* d*.*

As polarization d increases, $\hat{\lambda}$ increases. Polarization incentivizes potential candidate with high quality to bid for the party nomination.

3 Evidence

Our theory predicts that as polarization increases, professionals with higher quality are going to bid for party nomination. When professionals with higher quality bid for party nomination and eventually get elected, they will perform better. Our test hypothesis is that the electorate with higher polarization selects judges who perform better.

3.1 Data and Measurement

The data-set used for the empirical analysis has two pieces. First, we have data on state supreme courts. Second, we have data on voter polarization. This section introduces each dataset in turn.

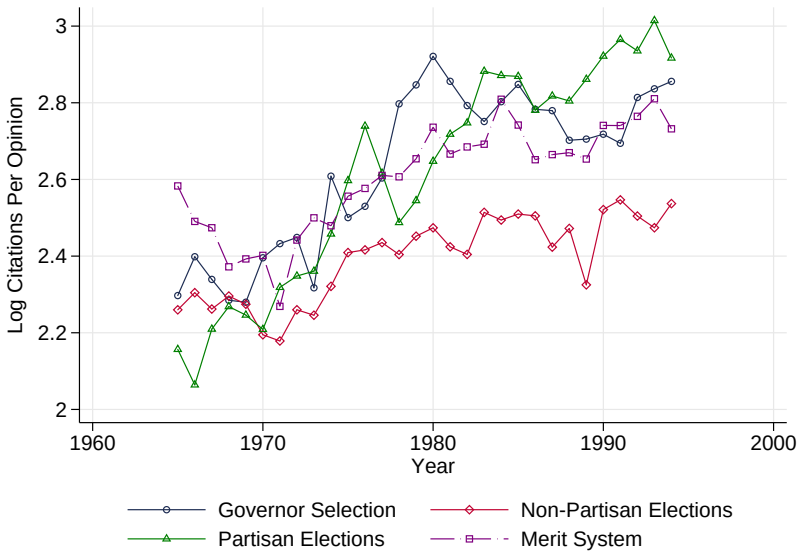
The data on state supreme court judges come from Ash and MacLeod (2015) and Ash and MacLeod (2016). It merges information on judge biographies, state-level court institutions, and published judicial opinions of all state supreme court judges working between 1965 and 1994. These data allow panel estimates on the effects of judge and court characteristics on judicial performance. Note that while the original dataset goes back to 1947, we start in 1965 so that a sufficient number of judges began in years for which we have voter polarization data. Running the analysis with all years generates similar results.

A useful feature of our data is that different states have different systems for selecting and retaining judges. The model described previously best fits a partisan election system, with two parties representing two sides of the political spectrum. In state courts, there are also non-partisan election, merit selection, and governor selection. We might not expect the same effects of polarization in these systems, and therefore they provide a placebo check.

The empirical challenge is in measuring work quality. As discussed in Epstein et al. (2013), judges cite previous rulings if they are useful inputs to decisions; therefore they can be understood, on average, as a measure for peer expert evaluation of decision quality. Citations are categorized by Bloomberg Law staff attorneys as positive, distinguishing, or negative. A positive citation is a clear signal that a decision is found useful by a future judge. A distinguishing citation indicates that part of the ruling is useful but needs to be clarified—so this is perhaps a weaker signal of opinion quality. The significance of a negative citation is more problematic. Therefore, following Choi et al. (2010) and Ash and MacLeod (2016), we measure the quality of judge decisions by the number of positive (non-critical) citations to a judge's opinions. Figure 3.1 plots the time series in decision quality over time by appointment system.

Another way to measure judicial quality is to use bar association evaluations of

Figure 3.1: Decision Quality Over Time, By Appointment System



Notes. Log citations per opinion, averaged by state-year, and plotted by year, separately for the four appointment systems.

judge quality (Lim and Snyder, 2015). These evaluations are based on surveys of attorneys. The surveys ask for the respondents' views on a variety of criteria, including integrity, judicial temperament, knowledge of the law, communication skills, diligence, professional competence, and case management. The bar association evaluation suffers from a data limitation: it only exists for some states in recent years. Moreover, in light of our theoretical framework, we want to capture performance that could be attributed to expertise. The bar association evaluation includes attributes other than expertise and thus not an appropriate measure in this framework.[8]

The data on voter polarization in the state electorate comes from Caughey et al. (2016). Their public opinion data includes canonical academic surveys, such as the American National Election Study and the General Social Survey as well as polls

[8]To validate citation measure as judge-specific measures of performance, Ash and MacLeod (2016) show that across judges, citations per opinion are positively correlated with bar association evaluations of judge quality.

from commercial polling organizations such as Gallup, CBS News/NYTimes, ABC News/Washington Post, Time Magazine, Pew, and many others. They include survey questions for which the "liberal" answer involved greater government spending or activity. They use the dynamic hierarchical group-level item-response theory model from Caughey and Warshaw (2015) to estimate the average ideology of defined subpopulations (e.g., Democrats, Republicans, and Independents in each state). This method allows them to combine multiple survey questions into scaled measures of ideology while addressing the problems of sparse survey data. The polarization measure is the ideological distance between the average Democrat and the average Republican identifier in the state public in a year. The key explanatory variable of interest, for each judge, is the polarization level at the time of his or her appointment.

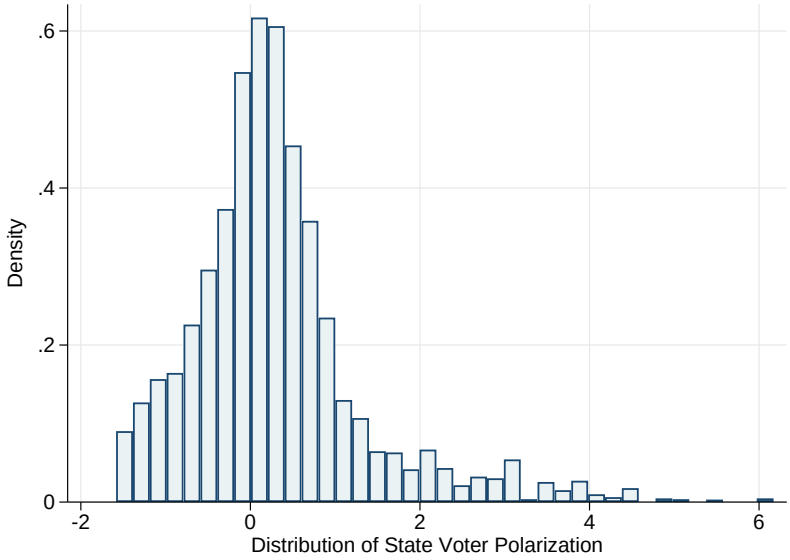
To assist with interpreting the estimates, we standardized the measure to mean zero and standard deviation one. Figure 3.2 shows the distribution of this measure. It is somewhat skewed with some outliers. As detailed further below, our main results are robust to dropping observations with high values, to a log transformation of the measure, and to a within-court-year rank-percentile specification.

3.2 Basic Specification

To identify the effect of polarization on judicial performance, we compare judges working on the same court at the same time, but who were selected under different levels of voter polarization. We construct decision quality Y_{ist} from the opinions written by judge i in state s at year t. We then estimate the linear model

$$Y_{ist} = \alpha_{st} + \rho V_i + \epsilon_{ist} \tag{3.1}$$

Figure 3.2: Distribution of Voter Polarization



Notes. Histogram of state voter polarization for the years 1965-1994, from Caughey et al. (2016).

where α_{st} is a state-year fixed effect, V_i is voter polarization at the starting year when judge i was selected, and ϵ_{ist} is an error term. For inference on statistical significance of the coefficients, we use two-way clustering of standard errors by state and year.

The state-year fixed effect controls for any court-level time-varying factors influencing decision quality. It means that the coefficient ρ gives the difference between judges, working on the same court at the same time, selected under different polarization levels. To illustrate, consider a pair of judges working on the New Mexico Supreme Court in 1986. Judge Sosa joined the court in 1975, when polarization was equal to 0.8. Judge Stowers joined in 1982, when polarization had increased to 1.9. In 1986, Sosa's opinions earned 7.2 citations on average, while Stowers's earned 11.8. Our regressions aggregate and test for a significant statistical relationship between these within-court differences in starting-year polarization and in decision quality.

Our theory best fits a partisan election system, with two parties representing two

sides of the political spectrum. We estimate the above linear model using observations under each system separately. Figure 3.3 presents results of the baseline specification graphically. In partisan elections, there is a statistically significant positive relationship between starting-year polarization and judge quality. In non-partisan elections, in the merit system, and in governor selection, there is no effect. We can see this in a coefficient plot (top panel) from Equation 3.1, and in a binscatter diagram (bottom panel). We might not expect the same effects of polarization in these other systems, and therefore they provide a placebo check.

3.3 Robustness

3.3.1 Additional Controls

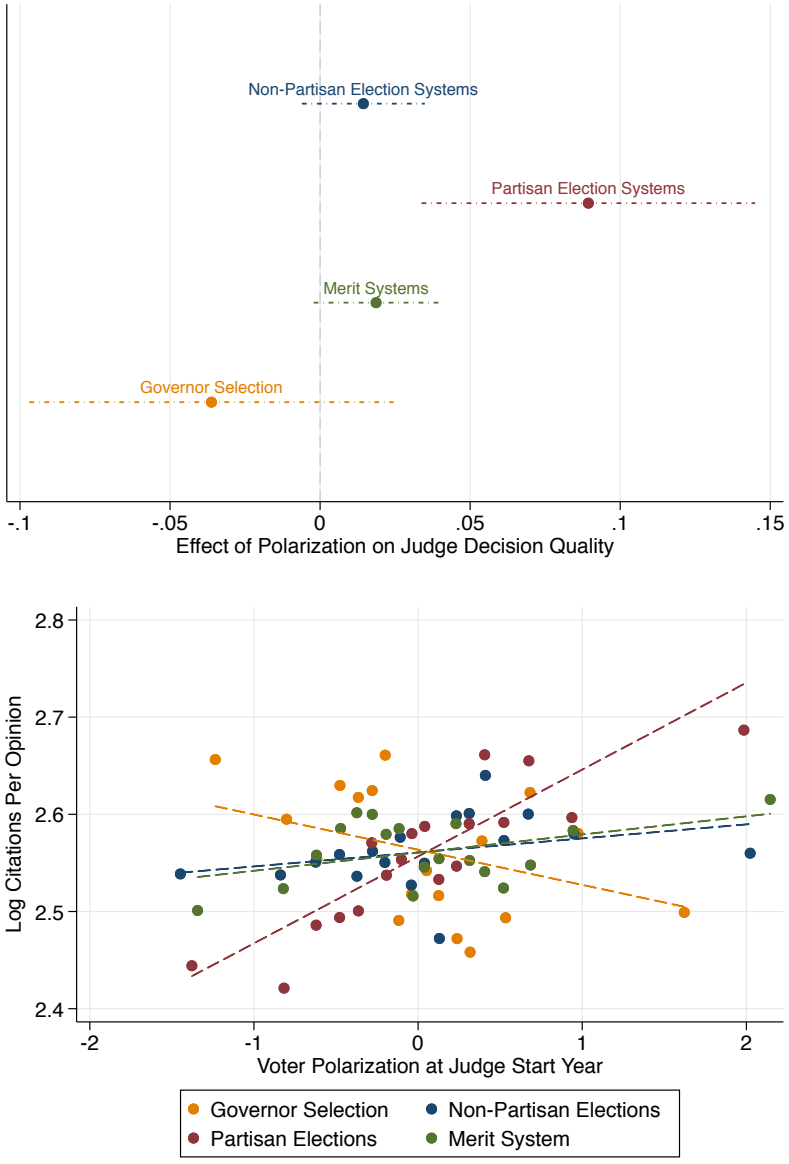
To probe the robustness of the result for partisan elections, we estimate the following linear model.

$$Y_{ist} = \alpha_{st} + \rho V_i + \mathbf{X}'_{ist}\beta + \epsilon_{ist} \tag{3.2}$$

What is included in $\mathbf{X}_{ist}$? To begin, an important source of endogeneity in our regression is that voter polarization and judges' quality could follow a confounded time trend. This could induce a spurious positive estimate for ρ. Therefore the most important item in $\mathbf{X}_{ist}$ is a set of judge cohort fixed effects (starting decade). To the same end, we also allow for state-specific trends in judges' quality and starting cohort: $\mathbf{X}_{ist}$ includes judge starting year, interacted with state fixed effects.

Next, we may be concerned that judges selected under more polarized times might see a different set of cases. For example, if judges selected under polarization have stronger policy preferences, they might manipulate the caseload to decide more constitutional law cases. Since constitutional cases tend to be more important (and therefore

Figure 3.3: Polarization at Starting Year and Judge Quality, by System



Notes. Top panel: Coefficient plot for regression of log positive citations per opinion on judge starting-year polarization and state-year fixed effects. 95% confidence intervals constructed with two-way clustering by state and year. Bottom panel: Binscatter diagram of log citations per opinion (vertical axis) against voter polarization (horizontal axis), residualized on state-year FEs, case controls, and state-level starting year trends. Plotted separately for partisan elections, nonpartisan elections, and merit system.

get more citations), that would produce a spurious correlation between starting-year polarization and decision quality.

What partly addresses this issue is that two-thirds of states have an official rule of random or rotating assignment, where judges have limited control over their case portfolio. In the appendix we show that our results are robust (and actually larger) when we limit to the set of states with random assignment. In the main regressions, we address this issue by including a set of controls for the area of law and related industries to a case. As in Ash and MacLeod (2016), we use the first five principal components of this large matrix of controls.

In the most conservative specification we include a set of judge-level covariates, beginning with a set of fixed effects for years of experience. To address the issue that starting-year polarization might affect ideology of judges, we include controls for judge political affiliation. The theory suggests that starting-year polarization could affect judges' quality in both expertise and intrinsic motivation dimensions. To differentiate these two mechanisms, we include controls for whether the judge attended a top-ranked law school. In follow-up results, we look at how polarization affects the types of judges who ascend to the bench.

Table 1 probes the robustness of the result for partisan elections. First, Column 1 reports the statistics from the baseline specification with just court-year fixed effects (the same as Figure 3.3 Top Panel). Column 2 shows the coefficient is slightly smaller, but still significant, upon inclusion of starting-decade fixed effects, and the result is also robust to the inclusion of state-specific starting-year trends (Column 3). As discussed, this shows that our results are not driven by confounding positive trends in both judges' quality and voter polarization over time. In addition, the results are not sensitive to the inclusion of controls for case characteristics (Column 4).

Finally, the results are similar with controls for judge characteristics and experience

Table 1: Effect of Start-Year Polarization on Judge Quality in Partisan System

	Effect on Log Positive Citations Per Opinion				
	(1)	(2)	(3)	(4)	(5)
Starting-Year	0.0894*	0.0618*	0.0608*	0.0601*	0.0666*
Polarization	(0.0321)	(0.0263)	(0.0246)	(0.0228)	(0.0248)
Top Law School					0.0010
					(0.0328)
Female					-0.0422
					(0.0370)
Democrat					0.0013
					(0.0409)
Republican					0.0355
					(0.0500)
N	2699	2699	2699	2699	2699
Adj. R^2	0.749	0.753	0.756	0.758	0.759
Court-Year FE's	x	x	x	x	x
Cohort FE's		x	x	x	x
State×Start-Year			x	x	x
Case Controls				x	x
Experience FEs					x

OLS estimates for Equation (3.1). Sample includes all partisan-election judges. Outcome is log positive citations per opinion. Cohort FE's include fixed effects for starting decade. State×Start-year means state fixed effects, interacted with judge starting year. Case controls include first five principal components of vector of area-of-law and related-industries indicators. Experience FE's includes indicators for half-decades of experience. Standard errors adjusted for two-way clustering by state and year, in parentheses. $+p < .1, *p < .05, **p < .01$.

Table 2: Specification Checks

	(1) Log Cites / Case (within 10 years)	(2) Cites / Case (Levels)
Starting-Year Polarization	0.0567*	0.953+
	(0.0229)	(0.489)
N	2699	2699
Adj. R^2	0.792	0.473
Court-Year FE's	X	X
Cohort FE's	X	X
State×Start-Year	X	X
Case Controls	X	X

OLS estimates for Equation (3.1) for alternative outcomes. Sample includes all partisan-election judges. "Cites / Case" means positive citations per opinion, with additional details in column header. "Starting Pol" is short for starting-year polarization. Cohort FE's include fixed effects for starting decade. State×Start-year means state fixed effects, interacted with judge starting year. Case controls include first five principal components of vector of area-of-law and related-industries indicators. Standard errors, adjusted for two-way clustering by state and year, in parentheses. $+p < .1, *p < .05, **p < .01$.

(Column 5). Our results are not driven by judges of different political affiliation being selected. The results are not affected by the quality of the law school attended ("Top Law School", a dummy for attending one of the classic top ten).

The appendix reports a number of additional robustness checks. The effects are robust to subsetting only to random-assignment states. The results are not sensitive to alternative weighting such as by size of caseload. We split up the data by time period, and can show that the effects are not driven by a particular time period. Results are statistically significant in each of the 22 regressions where we dropped an individual partisan-election state.

3.3.2 Specifications for Outcome and Treatment

Next we check the specifications for the outcome and treatment variables. Table 2 reruns the specification from Table 1 Column 4 for alternative definitions of case quality

Table 3: Effects on Additional Effort and Quality Measures

	Effect on Log Count			*Effect on Log Cites Per Opinion, By Cite Type*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	# Cases	# Words	# Cites	All	Discuss	Quote	Out-State
Starting-Year	0.00598	0.0314	0.0696	0.0640*	0.0407*	0.0573*	0.0395**
Polarization	(0.0210)	(0.0357)	(0.0420)	(0.0229)	(0.0177)	(0.0243)	(0.0136)
N	2699	2699	2699	2699	2699	2699	2699
Adj. R^2	0.680	0.481	0.558	0.754	0.754	0.731	0.819
Court-Year FE's	x	x	x	x	x	x	x
Cohort FE's	x	x	x	x	x	x	x
State×Start-Year	x	x	x	x	x	x	x

OLS estimates for Equation (3.1). Sample includes all partisan-election judges. Outcomes are (1) log number of opinions written, (2) log number of words written, (3) log total positive citations (not per opinion), (4) log all citations (including negative and distinguishing) per opinion, (5) log discussion citations per opinion (where opinion is specifically discussed and applied), (6) log citations where a judge directly quoted the language of an opinion, and (7) positive citations from courts in other states, meaning they are persuasive rather than binding precedent. Cohort FE's include fixed effects for starting decade. State×Start-year means state fixed effects, interacted with judge starting year. Standard errors, adjusted for two-way clustering by state and year, in parentheses. $+p < .1, *p < .05, **p < .01$.

and polarization when a judge joined the court. We still see effects when excluding citations that are more than 10 years after a case (Column 1), so we can rule out mechanical differences across the time period due to a case having more opportunities to be cited. The results are still significant when using citations in levels rather than logs (Column 2).

3.3.3 Additional Outcomes

To further understand these results, we regress the specification from Table 1 Column 3 (starting-decade FEs, state starting-year trends) for a number of additional outcomes. These estimates are reported in Table 3. First, in Column 1 we see that the effect is not driven by changes in the number of cases seen by higher-polarization judges. The effect on total volume of writing, as measured by log words written (Column 2), is zero. For the total number of citations (per year, rather than per opinion; Column 3), we see

a positive coefficient of similar magnitude to the decision quality regressions, but it is noisier and not statistically significant.

Moving to additional measures of quality, we look at all citations (including negative and distinguishing) as a more inclusive quality measure (Column 4). We look at discussion citations (where a judge specifically discusses and applies a case) and quote citations (where a judge directly quotes an opinion's language) as more exclusive quality measures. We look at out-of-state citations as the most conservative quality measure, where an opinion is persuasive rather than binding precedent, and there is no opportunity for judges to cite themselves nor for logrolling (Choi et al., 2010). In all of these quality measures, there is a significant positive effect of starting-year polarization.

In the supplemental materials we have results for a number of different outcomes constructed from the case data. Higher starting-year polarization has no effect on opinion length, caselaw research (number of backward citations), concurrences written, or the affirm rate. It increases the rate a judge is overruled[9] but decreases the number of dissents.[10]

3.4 Alternative Explanations

We might be concerned that citation measure not only picks up the decision quality but also the ideological position of a decision. Then an alternative explanation for these results could be that judges selected in more polarized times get more citations because they are more ideological (rather than higher quality). This section reports some regressions exploring this possibility.

[9]Being overruled could be seen as a signal of (low) quality decisions. We do not include it in the main text because it is a very sparse outcome (only a handful of decisions go to the U.S. Supreme Court). Morever, in Ash and MacLeod (2015) we show that it does not respond like the other measures of quality to treatments that encourage intrinsic motivation.

[10]A decrease in dissents could be seen as a sign of lower intrinsic motivation, to the extent that dissenting is a costly effort to express one's legal views. We do not include it in the main text because it is also highly influenced by partisanship, so is a less clean measure of motivation than citations.

Table 4: Are effects driven by ideological position?

	All Cases			*Civil Cases*	*Criminal Cases*
	(1)	(2)	(3)	(4)	(5)
	Log Cites / Case			Log Cites / Case	Log Cites / Case
Starting-Year	0.0607*	0.0607*	0.0617*	0.0930*	0.0756*
Polarization	(0.0255)	(0.0255)	(0.0239)	(0.0428)	(0.0316)
Crime_Affirm_Rate		0.0414			
		(0.0596)			
Starting Pol			-0.0060		
× Election Year			(0.0104)		
N	2699	2458	2699	2480	2458
Adj. R^2	0.757	0.757	0.756	0.683	0.514
Court-Year FE's	x	x	x	x	x
Cohort FE's	x	x	x	x	x
State×Start-Year	x	x	x	x	x
Starting Decade × Party	x				

OLS estimates for Equation (3.1). Sample includes all partisan-election judges. Outcomes are (1, 2, 3, 5) log number of citations per opinion and (4, 6) rate that lower-court case is affirmed. Cohort FE's include fixed effects for starting decade. State×Start-year means state fixed effects, interacted with judge starting year. Standard errors, adjusted for two-way clustering by state and year, in parentheses. $+p < .1, *p < .05, **p < .01$.

3.4.1 Civil Cases vs. Criminal Cases

Civil cases involve private disputes between persons or organizations. Many civil cases are around contracts and property. Comparing to criminal cases, they tend to be more technical and less politicized. We compare effects by civil cases (e.g. contracts and property, which tend to be more technical and less politicized) to criminal cases (which tend to be more politicized). Starting-year polarization is associated with increased quality for both case types (Columns 4 and 5).

3.4.2 Control for Ideology

Ideally, we could get a measurement of judges' ideological positions and use this measure to account for the citation caused by the ideological position of their opinion. We could use the supreme court judges' decision on partisan issues to measure their ideological positions. However, the existing datasets on how state supreme court judges have voted on partisan issues only cover recent decades. To address the concern of ideological-position explanation, we include party affiliation interacted with judges' starting decades (Column 1). Our assumption is that a judge's ideology could be mainly explained by his or her political party at the decade he or she joined the court. As we observe in Column 1, this does not change the estimated coefficient.

Another way to measure judges' ideological positions is use affirm rate in criminal decisions. As criminal appeals are almost always made by the defendant, the affirm rate in criminal decisions is a measure of conservative ideology. To control for judges' ideological positions, we include affirm rate in criminal decisions. As Column 2 suggests, the effect of starting-year polarization on average citation remain positive and significant.

3.4.3 Ideology Driven Citation

First, we might expect that judges behave differently in election and non-election years. Without electoral incentives, a judge will write according to his or her ideology. With electoral incentives, a judge might write to appeal to the electorate and thus adjust the ideological position of the decision. If it is true that citations also pick up the ideological position of a decision, then we would expect to see a difference in the polarization effect on citations during election years. In Column 6 we report the results where we add a treatment variable interaction with election years in the baseline specification. There is no difference in citations, which is inconsistent with the ideological-position explanation.

4 Conclusion

Who chooses to run for public office that requires expertise? How does mass polarization affect candidates' decisions to run? These are crucial questions in the study of the function of a healthy democracy. Robust empirical results guided by formal theory provide a way forward.

This paper has developed a model of electoral competition where potential candidates with heterogeneous quality decide whether to bid for the party nomination. Electoral campaigns are costly, which discourages high quality individuals from seeking office. In a polarized electorate, however, voters cast their vote mainly based on candidates' party affiliations, reducing electoral campaign costs. In a polarized state, therefore, high quality professionals are more likely to run for high office. Applying the model to the context of state supreme courts, the model predicts that judges who are elected in a polarized state provide a higher-quality decision.

We find evidence consistent with the model. Judges who started on the court under higher levels of state-level vote polarization are of higher quality in terms of the positive citations to their decisions by later judges. The difference in quality appears to be due to intrinsic motivation, rather than ideology or expertise. These results add to the literature on the determinants of the quality of public officials in democratic systems.

References

Abramowitz, A. I. and Saunders, K. L. (1998). Ideological realignment in the us electorate. *The Journal of Politics*, 60(3):634–652.

Abramowitz, A. I. and Saunders, K. L. (2008). Is polarization a myth? *The Journal of Politics*, 70(2):542–555.

Acemoglu, D., Egorov, G., and Sonin, K. (2010). Political selection and persistence of bad governments. *The Quarterly Journal of Economics*, 125(4):1511–1575.

Ansolabehere, S., De Figueiredo, J. M., and Snyder Jr, J. M. (2003). Why is there so little money in us politics? *Journal of Economic perspectives*, 17(1):105–130.

Ash, E. and MacLeod, B. (2016). The performance of elected officials: Evidence from state supreme courts.

Ash, E. and MacLeod, W. B. (2015). Intrinsic motivation in public service: Theory and evidence from state supreme courts. *Journal of Law and Economics*.

Ashworth, S. and Bueno De Mesquita, E. (2009). Elections with platform and valence competition. *Games and Economic Behavior*, 67(1):191–216.

Banerjee, A. V. and Pande, R. (2007). Parochial politics: Ethnic preferences and politician corruption.

Barber, M. J. (2016). Ideological donors, contribution limits, and the polarization of american legislatures. *The Journal of Politics*, 78(1):296–310.

Baron, D. P. (1994). Electoral competition with informed and uninformed voters. *American Political Science Review*, 88(1):33–47.

Besley, T. and Coate, S. (2003). Elected versus appointed regulators: Theory and evidence. *Journal of the European Economic Association*, 1(5):1176–1206.

Besley, T., Folke, O., Persson, T., and Rickne, J. (2017). Gender quotas and the crisis of the mediocre man: Theory and evidence from sweden. *American economic review*, 107(8):2204–42.

Besley, T., Pande, R., and Rao, V. (2005). Political selection and the quality of government: Evidence from south india. Technical report, CEPR Discussion Papers.

Carson, J. L., Crespin, M. H., Finocchiaro, C. J., and Rohde, D. W. (2007). Redistricting and party polarization in the us house of representatives. *American Politics Research*, 35(6):878–904.

Carter, J. and Patty, J. W. (2015). Valence and campaigns. *American Journal of Political Science*, 59(4):825–840.

Caselli, F. and Morelli, M. (2004). Bad politicians. *Journal of Public Economics*, 88(3-4):759–782.

Caughey, D., Dunham, J., and Warshaw, C. (2016). Polarization and partisan divergence in the american public, 1946-2012.

Caughey, D. and Warshaw, C. (2015). Dynamic estimation of latent opinion using a hierarchical group-level irt model. *Political Analysis*, 23(2):197–211.

Choi, S. J., Gulati, G. M., and Posner, E. A. (2010). Professionals or politicians: The uncertain empirical case for an elected rather than appointed judiciary. *Journal of Law, Economics, and Organization*, 26(2):290.

Coate, S. (2004). Pareto-improving campaign finance policy. *American Economic Review*, 94(3):628–655.

Dal Bó, E., Finan, F., and Rossi, M. A. (2013). Strengthening state capabilities: The role of financial incentives in the call to public service. *The Quarterly Journal of Economics*, 128(3):1169–1218.

Epstein, L., Landes, W. M., and Posner, R. A. (2013). *The Behavior of Federal Judges*. Harvard University Press.

Erikson, R. S. and Palfrey, T. R. (2000). Equilibria in campaign spending games: Theory and data. *American Political Science Review*, 94(3):595–609.

Fiorina, M. P. and Abrams, S. J. (2008). Political polarization in the american public. *Annu. Rev. Polit. Sci.*, 11:563–588.

Fiorina, M. P., Abrams, S. J., and Pope, J. C. (2005). Culture war. *The myth of a polarized America*.

Hall, A. B. (2019). *Who Wants to Run?: How the Devaluing of Political Office Drives Polarization*. University of Chicago Press.

Herrera, H., Levine, D. K., and Martinelli, C. (2008). Policy platforms, campaign spending and voter participation. *Journal of Public Economics*, 92(3-4):501–513.

Hirano, S., Snyder Jr, J. M., Ansolabehere, S. D., and Hansen, J. M. (2010). Primary elections and partisan polarization in the us congress. *Quarterly Journal of Political Science*.

Lim, C. and Snyder, J. M. (2015). Is more information always better?party cues and candidate quality in u.s. judicial elections. *Journal of Public Economics*.

Mann, T. E. and Ornstein, N. J. (2016). *It's even worse than it looks: How the American constitutional system collided with the new politics of extremism*. Basic Books.

Mattozzi, A. and Merlo, A. (2008). Political careers or career politicians? *Journal of Public Economics*, 92(3-4):597–608.

McCarty, N. (2007). The policy effects of political polarization. *The transformation of American politics: Activist government and the rise of conservatism*, pages 223–55.

McCarty, N., Poole, K. T., and Rosenthal, H. (2009). Does gerrymandering cause polarization? *American Journal of Political Science*, 53(3):666–680.

McCarty, N., Poole, K. T., and Rosenthal, H. (2016). *Polarized America: The dance of ideology and unequal riches*. mit Press.

McGhee, E., Masket, S., Shor, B., Rogers, S., and McCarty, N. (2014). A primary cause of partisanship? nomination systems and legislator ideology. *American Journal of Political Science*, 58(2):337–351.

Padró i Miquel, G. (2007). The control of politicians in divided societies: The politics of fear. *The Review of Economic Studies*, 74(4):1259–1274.

Prat, A. (2002). Campaign advertising and voter welfare. *The Review of Economic Studies*, 69(4):999–1017.

Prato, C. and Wolton, S. (2016). The voters' curses: why we need goldilocks voters. *American Journal of Political Science*, 60(3):726–737.

Prato, C. and Wolton, S. (2018). Rational ignorance, populism, and reform. *European Journal of Political Economy*, 55:119–135.

Prato, C. and Wolton, S. (2019). Campaign cost and electoral accountability. *Political Science Research and Methods*, 7(1):1–21.

Prior, M. (2007). *Post-broadcast democracy: How media choice increases inequality in political involvement and polarizes elections*. Cambridge University Press.

Snyder Jr, J. M. and Ting, M. M. (2002). An informational rationale for political parties. *American Journal of Political Science*, pages 90–110.

A Model Proofs

Proof. Proof of Proposition 1

Candidate L chooses campaign effort a_L to solve

$$\max_{a_L} p_L\alpha - {a_L}^2/2$$

where$p_L = \frac{1}{2} + \delta(\frac{1}{2}\frac{(l_L - l_R)}{d})$. The solution to the maximization problem is $a_L^* = \frac{\delta\alpha}{2d}$.

For Candidate R, she chooses campaign effort a_R to solve

$$\max_{a_R} p_R\alpha - {a_R}^2/2$$

where$p_R = \frac{1}{2} - \delta(\frac{1}{2}\frac{(l_L - l_R)}{d})$. The solution to the maximization problem is $a_R^* = \frac{\delta\alpha}{2d}$. □

Proof. Proof of Proposition 2

Let $\hat{\lambda}$ be the value of λ that solves the following equation

$$\frac{\alpha}{2} = v_1(\lambda) + c(l_J^*)$$

We have

$$\hat{\lambda} \equiv \alpha - (\frac{\delta\alpha}{2d})^2$$

Because $v_1(\lambda)$ is increasing in λ, any $\lambda < \hat{\lambda}$ satisfies

$$\frac{\alpha}{2} > v_1(\lambda) + c(l_J^*).$$

□