To Elect or to Appoint? Bias, Information, and Responsiveness of Bureaucrats and Politicians.[*]

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Abstract

In this paper, we address empirically the trade-offs involved in choosing between bureaucrats and politicians. In order to do this, we need to map institutions of selection and retention of public officials to the type of public officials they induce. We do this by specifying a collective decision-making model, and exploiting its equilibrium information to obtain estimates of the unobservable types. We focus on criminal decisions across US states' Supreme Courts. We find that justices that are shielded from voters' influence ("bureaucrats") on average (i) have better information, (ii) are more likely to change their preconceived opinions about a case, and (iii) are more effective (make less mistakes) than their elected counterparts ("politicians"). We evaluate how performance would change if the courts replaced majority rule with unanimity rule.

1   Introduction

The basic principle of representative democracy dictates that all legislative and top executive positions in public office are to be occupied by elected representatives (politicians). But besides this broad guiding principle, the idea of representation in the operation of government is much more muddled. In all modern democracies, a number of public positions of great influence are held by non-elected officials (bureaucrats). Examples for the US include the Supreme Court, the Federal Reserve Board, and federal agencies.

The different methods of selection and retention of public officials induce differences in the performance of government. Working well, elections may induce public officials to act in the public interest, even when their preferences are not aligned with those of the public; this is the *disciplining* role of elections. Working badly, elections can also induce an official who has more information than the public to *pander* to the public, choosing not the appropriate action, but instead the most popular action; elections can also induce officials to divert resources away from developing expertise.

Given these various competing effects, it is ultimately an empirical question how politicians and bureaucrats differ in type and performance. First, there are *selection* effects: do voters select different *types* of public officials – more or less biased, better or worst at gathering and processing information –than government officials? Second, there are *incentive* effects: do reelection induce public officials to improve their proficiency to deal with the flow of information of each decision? Do they induce them to be more responsive to the public? Third, differences in type affect performance: are bureaucrats more *effective* than politicians?

In this paper, we tackle these questions. We build on the foundations laid by a large literature, which provides overwhelming evidence that bureaucrats and politicians produce different public policy outcomes. Our starting premise is that in order to understand the trade-offs inherent in choosing between bureaucrats and politicians, we need to map institutions to the type of public officials they induce. The difficulty, of course, is that this type is unobservable. We bridge this gap by specifying a model of voting in committees, and using equilibrium information to recover the unobservable types. The main idea is to exploit the information contained in the joint observation of the individual decisions of members of committees that deal with issues involving both ideological considerations and common values. The underlying common value induces correlation in votes in equilibrium,

which allows us to disentangle bias and quality of information.

We focus here on criminal decisions in US states' Supreme Courts. The application suits the approach perfectly for two reasons. First, selection and retention methods vary across states: while in some states supreme court justices are elected, in others they are appointed by elected officials. Moreover, non-elected justices are appointed for life in some states, but must face a political reappointment or an up-or-down retention election by voters in other states. Second, as other high courts, state supreme courts are committees making decisions on issues in which there is an underlying common value component; a correct decision under the law, even if this can be arbitrarily hard to grasp.[1]

Incorporating elements of common values does not mean ruling out disagreement. Without full certainty in how the law applies to the particulars of each case, the decision of the court will typically balance the members' goal of reaching a correct decision, with conflict among them in terms of what is the correct decision in each case. This conflict arises naturally in the relatively complex cases considered by the high courts because of differences in the information processed by each justice, because of differences in their ability to produce and evaluate case-specific information, and because of idiosyncratic biases in how justices approach different cases.[2]

In the model, we assume that the goal of any justice i in any given case t is to rule according to i's own best understanding of how the law applies to the particulars of the case. Specifically, we assume that in each case t, a justice's understanding of the particulars of the case is summarized by a private signal, with precision θ_{it}. The imprecision of the signal leaves room for interpretation, which in turn allows ideological biases to come into play. This bias boils down to a threshold π_{it} such that the justice prefers to rule for the Petitioner in case t if and only if the probability that the law favors the Petitioner is at least π_{it}. Information precision and bias then interact to produce outcomes. Higher precision means that it is typically more clear for the justice whether the ruling should favor the Petitioner or the Respondent according to the body of law. A larger bias means that

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[1]Decision-making in the court is different than in a legislature. As Supreme Court Justice Ruth Ginsburg put it, "[E]ach case is based on particular facts and its decision should turn on those facts and the governing law, stated and explained in light of the particular arguments the parties or their representatives choose to present." (From the statement submitted to the Senate Committee on the Judiciary by Justice Ruth Ginsburg.) This distinction is also emphasized by Cameron and Kornhauser (2008), among others.

[2]Justices' biases can, but do not necessarily reflect ideological considerations. These preconceptions about how the law maps to the particulars of each case can also reflect ingrained theoretical arguments about the law, personal experiences, and other determinants for a non-neutral approach to this case.

despite her case information, a justice persists in going with her preconception of how to rule in a case like this.

In this framework, electoral institutions can sway a judge's votes by changing the θ or π with which she makes her decision. Whether electoral concerns affect θ or π more prominently is an important distinction; for instance, from the point of view of committee design, it is important to know whether electoral concerns cause judges to vote less informedly (ie. lower θ) or become more biased in favor of the Petitioner (ie. increase π).

Using a structural estimation approach, we can disentangle the effects of electoral concerns on bias π and quality of information θ. In particular, we recover the values of $(\theta_{it}, \pi_{it})|X_t$ for each justice i conditioning on observable characteristics of the cases and the justices, including experience variables (prior judicial and political experience, experience in the state supreme court), context variables (measures of the political preferences of voters and politicians at the time of appointment and at the time of decision), and, most importantly, the institutional variables (whether the justice was elected, appointed for an original term subject to a political reappointment or a retention election, or appointed for life). We do this for two variants of the model: the expressive voting model (where justices care about getting their decision right), and the strategic voting model, where justices are concerned about getting the court's decision right, and therefore "learn" from their peers in equilibrium.[3] Given our estimates of θ and π, we can also simulate effects of counterfactual voting rules and electoral institutions on vote outcomes.

The main results clarify the trade-offs inherent in choosing between bureaucrats and politicians. First, justices that are shielded from voters' evaluations ("bureaucrats") on average have higher quality of information than justices that face either reelection or retention elections ("politicians"). In fact, the quality of information of justices that are shielded from voters' influence is on average 25% larger than that of justices facing retention elections, and 30% larger than that of justices that are elected. Institutions of selection and retention of justices also affect justices' bias (justices that are not shielded from voters are more moderate on average), but this effect is more modest in magnitude.

These two components of justices' type – quality and bias – affect how the justices' information is reflected in their voting behavior. We find that justices who are shielded

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[3]In the law and economics literature, this distinction is referred to as whether judges are consequentialist or non-consequentialist (see Cameron and Kornhauser (2008)).

from voters not only have better information, but are also more likely than elected justices to change their preconceived opinions about a case. We quantify the flexibility of a judge to incorporate case-specific information with the FLEX measure introduced in Iaryczower and Shum (2009). This is the probability that a judge votes differently than what she would have voted for in the absence of case-specific information. We show that the average FLEX score for elected justices (36%) is lower than that of justices appointed for life (41%).

Our estimation and modeling approach also allows us to assess directly the effect of institutions on the performance of the court, as measured by the probability that the court reaches an incorrect decision. While these error rates are small overall, we find that justices appointed for life and appointed justices with a political reappointment on average have a lower probability of reaching an incorrect decision (0.1%) than both justices that face retention elections (0.4%), and justices that are elected (0.9%).

While state supreme courts typically have a relatively low total error rate, the pattern of mistakes is highly asymmetric. At both the individual level and at the court level, on average justices make comparatively large mistakes in favor of the Petitioner.[4] This begs the question as to how the effectiveness of the courts would change if simple majority rule (the voting rule currently in use) were replaced by a decision-making rule that tilts the balance in favor of the Respondent. In particular, we consider a change to a unanimity rule in which ruling against the Respondent requires the consent of all justices.

In both the strategic and the expressive voting model, introducing the change to unanimity rule would have major consequences for public outcomes and the effectiveness of the courts. In the expressive voting model, where justices care about their vote only, replacing majority rule by unanimity rule does achieve the purpose of reducing the probability of an incorrect court decision in favor of the Petitioner, but only by dramatically increasing the probability of an incorrect court decision in favor of the Respondent (reaching 33% for elected justices and 35% for non-elected justices facing retention elections). The strategic voting model predicts large changes in the opposite direction. As a result of the move to unanimity, strategic justices who care about the decision of the court would modify their strategy in equilibrium, becoming harsher against the Respondent. As a result, the move to unanimity would significantly increase the probability of a mistaken decision *against* the

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[4]To compare this with the ex ante probability of an incorrect decision, the probability of a mistake favoring the Petitioner when the Respondent should win is 0.3% for justices that are isolated from voters, 1.1% for justices facing retention elections and 2.6% for justices facing competitive reelections.

Respondent (reaching 21% for elected justices).

The rest of the paper is organized as follows. Section 2 contains a literature review. Section 3 introduces the theoretical model of collective decision-making in the court and characterizes equilibrium outcomes. Section 4 describes the estimation procedure. Section 5 presents the main results. Section 6 concludes.

2   Related Literature

The theoretical literature on bureaucrats and politicians builds on the seminal contributions of Barro (1973) and Ferejohn (1986), which provide the foundations of the theory of elections as disciplining device. Barro (1973) introduces the main idea that voters can limit (but not eliminate) rent extraction by elected politicians by making their reelection conditional on observed behavior. Ferejohn (1986) formalizes a similar idea within a moral-hazard framework (voters' payoffs depend on the – unobservable, costly – effort exerted by the politician), and derives the optimal retrospective voting rule. Banks and Sundaram (1998) study the optimal retention rule for voters in a model that incorporates both moral hazard and adverse selection. Canes-Wrone, Herron, and Shotts (2001) consider a model in which elected officials have the same preferences as the electorate, and the incumbent attempts to signal talent (e.g., more precise information). They conclude that elected officials will pander (choose the popular, ex ante preferred action) only under some limited conditions. Canes-Wrone and Shotts (2007), however, show that elected officials will be more inclined to pander when there is uncertainty regarding their congruence with the electorate.

Maskin and Tirole (2004) and Alesina and Tabellini (2007, 2008) explicitly compare bureaucrats and politicians. Maskin and Tirole (2004) introduce a lack of congruence between voters and public officials. It is assumed that the official values office per se, and also has a legacy motivation. When the office-holding motive is strong, politicians want to pander, but when the office motivation is weak, they are guided by the legacy motivation. Maskin and Tirole (2004) conclude that non-elected officials (bureaucrats, or "judges") are preferred when the public is poorly informed about what the optimal action is, and when feedback about the quality of the decision is limited. Alesina and Tabellini (2007) models career concerns of bureaucrats (appointed officials) and politicians (elected representatives). They conclude that bureaucrats are preferred in technical tasks for which ability is more

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important than effort, or when there is large uncertainty about whether the policymaker has the required abilities to fulfill her task.

A key common element in these theoretical approaches is that the type of government official is unknown. The key factor driving the results is the amount of information that is revealed in different institutional settings about unobservable characteristics of public officials (their preferences, their competence, or the readiness to exert effort). To the best of our knowledge, this key feature has not been incorporated into applied research on the topic. There is, however, a wealth of empirical research motivated by the same underlying questions that inspired the theoretical literature.

First, a number of papers show that elected and appointed government officials do in fact behave differently. There is substantial evidence documenting this finding for the case of elected and appointed regulators (see Besley and Coate (2003); see Besley and Case (2003) for a survey). There is also a relatively large literature documenting this finding for the case of elected and appointed judges in the US states. Hanssen (2000) shows that states with elected judges have significantly smaller bureaucracies. He interprets this as evidence that elected judges are more independent. Hanssen (2004) shows that institutions that diminish the ability of politicians to determine whether a judge remains in office are associated with closer competition between political parties, and with larger differences in party platforms, while the least independence-enhancing institutions are associated with a stronger single party control. Besley and Payne (2005) show that states that appoint their judges have lower levels of discrimination charges compared to those that use some form of election. Gordon and Huber (2007) analyze the sentencing behavior of district court judges that are elected and appointed (facing a subsequent retention election) in the state of Kansas. They show that close to the elections, elected judges are harsher in sentencing relative to appointed judges.[5]

Choi, Gulati, and Posner (forthcoming) also focus on state Supreme Court judges, and shares our emphasis on measuring the effects of the judicial selection process on non-ideological characteristics of the judges. Their methodology is quite different, as they focus on *opinions* instead of voting, and directly find observable proxies of judges' qualities,

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[5]More broadly, there is overwhelming evidence showing that judges are sensitive to the political environment. See Brace and Hall (1990, 1993, 1997) for US states, Gely and Spiller (1990); Spiller and Gely (1992) for the US Supreme Court, Helmke (2002) and Iaryczower, Spiller, and Tommasi (2002, 2006) for the Supreme Court in Argentina, along many others.

including the number of opinions written, and the number of times a judge's opinions were cited by other courts at the same level of the judicial hierarchy. In contrast, we focus on the individual votes to decide the position of the court, and consider a structural equilibrium model of voting which allows us to "back out" estimates of judges' bias and quality of information as a function of the judicial selection mechanism.[6]

Also taking a more structural approach is Lim (2008), who estimates a structural model that fully incorporates career concerns into judges' behavior, using sentencing data from Kansas.[7,8] Differently than this paper, Lim's model doesn't allow the possibility of common values and dispersed information, which seem central to the nature of decision-making in the court.[9] Here we allow both ideology and common values in the context of equilibrium behavior. Our model of collective decision-making builds on Austen-Smith and Banks (1996), and Feddersen and Pesendorfer (1997, 1998), and is closest to that of Duggan and Martinelli (2001). The empirical approach builds on Iaryczower and Shum (2009).[10]

An interesting issue in connection to strategic voting in this setting is the possible impact of pre-vote deliberation on outcomes. The main question is whether strategic agents will use pre-vote deliberation to communicate information to their peers, or whether they will use these arguments to try to influence their opinion, possibly not revealing some information that can be harmful to their case, or exaggerating evidence one way or the other. While the incentive to do so is small when interests are well aligned (Coughlan (2000)), this is not the case when there is (interim) disagreement, as in the setting consider here. This makes truthful revelation of information more difficult, as is illustrated in the analysis of Austen-

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[6]Choi, Gulati, and Posner (forthcoming) conclude that appointed judges write higher quality opinions than elected judges do, but elected judges write more opinions.

[7]See Diermeier, Keane, and Merlo (2005) for a similar approach in Congress.

[8]Lim shows that the sentencing behavior of elected judges is in fact an important determinant of their reelection, and that while the sentencing behavior of appointed judges does not vary much with the political orientation of the district, elected justices tend to be more lenient in liberal leaning districts.

[9]For structural estimation of ideological models of voting in committees (that do not directly incorporate career concerns) see Poole and Rosenthal (1985, 1991), Heckman and Snyder (1997), Londregan (1999), Clinton, Jackman, and Rivers (2004) – for the US Congress– and Martin and Quinn (2002, 2007) – for the US Supreme Court. Degan and Merlo (2008) and de Paula and Merlo (2009) consider the nonparametric identification and estimation of the ideological voting model. Coate and Conlin (2004), Coate, Conlin, and Moro (2008), and Kawai and Watanabe (2009) also perform structural estimation of strategic voting (ie. "pivotal voting") models with ideological voters.

[10]With common values and dispersed information, strategic considerations – which are absent in the sincere voting spatial model – come into play. Our methodology deals with these strategic considerations. For a connected approach, emphasizing the bicameral structure of Congress, see Iaryczower, Katz, and Saiegh (2009)).

Smith and Feddersen (2005, 2006) (see also Li, Rosen, and Suen (2001) and Doraszelski, Gerardi, and Squintani (2003)).[11] Visser and Swank (2007) consider pre-vote deliberation when committee members want to signal their ability to a principal. Reputation concerns here induce committee members to misrepresent their information in deliberations but, in spite of this, they always vote unanimously. This is because in this setting, disagreement signals lack of competence. Visser and Swank's basic logic – that information is reflected in the variation of the justices' votes – also underlies the identification of the key model parameters from the observed vote data (see Section 4). However, in our setting votes provide information about not only justices' ability, but also their bias.

3   A Model of Decision-Making in the Court

In this section, we describe the model of collective decision-making in the courts. In doing so, we take the parameters of the problem as given, and their dependence on publicly observable characteristics of the choice situation as understood. We make this relation explicit in Section 4.

The court is composed of n justices, $i = 1, \ldots, n$, who consider T independent cases, $t = 1, \ldots, T$. In each case t, justice i can rule in favor or against the Respondent. We denote this ruling by $v_i^t \in \{0, 1\}$, with $v_i^t = 0$ indicating a ruling in favor of the Respondent and $v_i^t = 1$ a ruling in favor of the Petitioner. The court aggregates the decisions of the individual justices by simple majority rule; i.e. rules in favor of the Petitioner ($v_t = p$) if $\sum_i v_i^t \geq R_s \equiv \frac{n+1}{2}$ and in favor of the Respondent ($v_t = d$) otherwise.

We consider two related models of individual behavior. In the *expressive* voting model, we assume that in deciding their vote, justices care only about their individual vote. In the *strategic* or outcome-oriented voting model, we assume instead that justices care about the ruling of the court. We assume that the goal of any justice i in any given case t is that she (in the expressive voting model) or the court (in the strategic voting model) rules according to i's own best understanding of how the law applies to the particulars of the case.

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[11] If agents send not only relevant information, but also other (random) messages, which the group uses to define correlated voting strategies, more can be done. Gerardi and Yariv (2007) show that every outcome that can be implemented with a non-unanimous voting rule r can also be implemented (as a sequential equilibrium of a cheap talk extension of the voting game) with a non-unanimous rule r'. This obviously enlarges the set of possible equilibrium outcomes for each given voting rule.

Specifically, before ruling in each case t, each justice i observes a private signal $s_{it} = \omega_t + \sigma_{it}\varepsilon_{it}$, where $\varepsilon_{it} \sim \mathcal{N}(0,1)$. Here $\omega_t \in \{0,1\}$ in an unobservable variable – for both the econometrician and the justices – indicating whether the meaning of the law favors the Petitioner ($\omega_t = 1$) or the Respondent ($\omega_t = 0$), and $\theta_{it} = 1/\sigma_{it}$ is a scale parameter that parametrizes the informativeness of i's signals.[12] This parameterization of the information structure satisfies the Monotone Likelihood Ratio Property (MLRP), which is important in what follows.

Justices care about this information because their payoffs are state dependent. In particular, we assume that given $\pi_{it} \in (0,1)$, justice i has a payoff of $-\pi_{it}$ when the law favors the Respondent but she/the court rules in favor of the Petitioner ($v_t = 1$ when $\omega_t = 0$) and of $-(1-\pi_{it})$ when the law favors the Petitioner but instead she/the court rules in favor of the Respondent ($v_t = 0$ when $\omega_t = 1$).[13] The payoffs of $v_t = \omega_t = 0$ and $v_t = \omega_t = 1$ are normalized to zero. Thus given information E, Justice i votes to rule against the Respondent in t if and only if $\Pr^i(\omega_t = 1|E) \geq \pi_{it}$. Equivalently, justice i votes to rule against the Respondent in case t given E if and only if the likelihood ratio $\Pr^i(E|\omega_t = 1)/\Pr^i(E|\omega_t = 0)$ is larger than $\frac{\pi_{it}}{1-\pi_{it}}\frac{1-\rho_t}{\rho_t}$, where $\rho_t \equiv \Pr(\omega_t = 1)$ denotes justices' common prior probability of the unobserved state ω_t. Note that since ω_t is assumed to be unobservable, there is always information that would make any two justices disagree about a case. Moreover, if sufficiently biased, two justices can disagree almost always. In particular, with $\pi_{it} \approx 0$ (or $\pi_{it} \approx 1$), justice i is almost always ideological. On the other hand, when $\pi_{it} = 1/2$ for all i, the setting boils down to an unbiased, pure common values model.[14]

The two alternative models of behavior differ in how much information each justice has *in equilibrium*. In the **expressive voting model**, justices care about their own ruling, and therefore vote based on their own information s_{it}, i.e., rule against the Respondent

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[12]We write θ_{it} and not simply θ_i, invariant in t, because in the estimation we will allow the precision of information to depend on characteristics of the case. With identical observable characteristics across cases we would have $\theta_{it} = \theta_i$ for all t. The same remark applies to the bias π_{it} below.

[13]Thus, $\pi_i \neq 1/2$ reflects a bias towards the Petitioner or the Respondent. These preconceptions about how the law maps to the particulars of each case can reflect a variety of factors inducing a non-neutral approach to this case, such as ingrained theoretical arguments about the law, personal experiences, or ideological considerations.

[14]In our setting, justices share common priors, but their ideological biases are captured by the π_{it} parameters. See Froeb and Kobayashi (1996) for a model where justices' biases are manifested in their priors.

whenever $\Pr^i(\omega_t = P|s_{it}) \geq \pi_{it}$. Then E consists only of s_{it}, and i votes to rule against the Respondent if

$$\frac{\Pr(s_{it}|\omega_t = 1)}{\Pr(s_{it}|\omega_t = 0)} = \frac{\phi(\theta_{it}[s_{it} - 1])}{\phi(\theta_{it}s_{it})} \geq \frac{\pi_{it}}{1 - \pi_{it}} \frac{1 - \rho_t}{\rho_t} \tag{1}$$

Let s_{it}^{exp} denote the value of s_{it} that solves (1) with equality. By the MLRP the ratio $L(s) \equiv \Pr(s|\omega_t = 1)/\Pr(s|\omega_t = 0)$ is increasing in s, so that i rules against the Respondent whenever $s_{it} \geq s_{it}^{exp}$, and in favor of the Respondent otherwise. These cutoff points s_{it}^{exp} for $i = 1, \ldots, n$ completely characterize behavior in the expressive voting case. Therefore we can write the likelihood of the justices' votes in case t in the expressive voting model as

$$\Pr(v_t) \equiv \sum_{\omega_t} \Pr(\omega_t) \prod_{i=1}^{n} [1 - \Phi(\theta_{it}[s_{it}^{exp} - \omega_t])]^{v_{it}} \Phi(\theta_{it}[s_{it}^{exp} - \omega_t])^{1-v_{it}} \tag{2}$$

In the **strategic voting model**, justices care about the ruling of the court. As a result, any justice i then considers the implications of her vote assuming that she is pivotal for the decision. (This supposition is not correct when the justice is not in fact pivotal, but for the same reason these mistakes have no cost for the outcome-oriented justice.) Here, the relevant information for justice i in case t is not only her private information s_{it}, but also the equilibrium information contained in the event that i is pivotal for the court's decision, given the equilibrium strategy profile followed by the remaining justices. Let $\mu_{jt} : \mathbf{R} \to [0, 1]$ denote the strategy of justice j in case t, where $\mu_{jt}(s_{jt}) \equiv \Pr(v_{jt} = 1|s_{jt})$. Then (1) becomes

$$\frac{P_{\mu_{-i}}(piv_{it}|\omega_t = 1)}{P_{\mu_{-i}}(piv_{it}|\omega_t = 0)} \frac{\phi(\theta_{it}[s_{it} - 1])}{\phi(\theta_{it}s_{it})} \geq \frac{\pi_{it}}{1 - \pi_{it}} \frac{1 - \rho_t}{\rho_t} \tag{3}$$

As before, the MLRP implies that i's best response to any strategy $\mu_{-i,t}$ of the remaining justices is a cutoff strategy, such that i rules in favor of the Petitioner ($\mu_{i,t}(s_{it}) = 1$) if s_{it} satisfies (3), and in favor of the Respondent ($\mu_{it}(s_{it}) = 0$) otherwise. This in turn implies that all responsive equilibria are cutoff equilibria; i.e., that any equilibrium is characterized by cutpoints s_{it}^{st} for each justice $i = 1, \ldots, n$ such that justice i votes against the Respondent if and only if $s_{it} \geq s_{it}^{st}$. Now, given cutoff strategies, $\Pr(v_{it} = 1|\omega_t) = \int \mu_{it}(s)\phi(\theta_{it}[s - \omega_t])ds = [1 - \Phi(\theta_{it}[s_{it}^{st} - \omega_t])]$. Therefore from (3), and letting $\mathcal{C}_{R-1}^i$ denote the set of coalitions $C \subset N \setminus i$ with $R - 1$ members, $\{s_{it}^{st}\}_{i=1}^{n}$ is given by the n equations

$$\frac{\sum_{C \in \mathcal{C}_{R-1}} \left(\prod_{j \in C} [1 - \Phi(\theta_{jt}[s_{jt}^{st} - 1])] \right) \left(\prod_{j \neq i, j \notin C} \Phi(\theta_{jt}[s_{jt}^{st} - 1]) \right)}{\sum_{C \in \mathcal{C}_{R-1}} \left(\prod_{j \in C} [1 - \Phi(\theta_{jt} s_{jt}^{st})] \right) \left(\prod_{j \neq i, j \notin C} \Phi(\theta_{jt} s_{jt}^{st}) \right)} \frac{\phi(\theta_{it}[s_{it}^{st} - 1])}{\phi(\theta_{it} s_{it}^{st})} = \frac{\pi_{it}}{1 - \pi_{it}} \frac{1 - \rho_t}{\rho_t}$$

(4)

The cutpoints $\{s_{it}^{st}\}$ completely characterize behavior in any such equilibrium. Given $\{s_{it}^{st}\}$, we can write the likelihood of the justices' votes in case t in the strategic voting case as

$$\Pr(v_t) \equiv \sum_{\omega_t} \Pr(\omega_t) \prod_{i=1}^{n} [1 - \Phi(\theta_{it}[s_{it}^{st} - \omega_t])]^{v_{it}} \Phi(\theta_{it}[s_{it}^{st} - \omega_t])^{1 - v_{it}}$$

(5)

The likelihood functions for the expressive and the strategic models (Eqs. 2,5) are almost identical, except for the cutoff points: s^{exp} for the expressive model, and s^{st} for the strategic model.[15]

4   Estimation

In this section we describe the estimation procedure. To simplify the exposition, we begin with the simplest scenario in which all cases are assumed to be homogeneous, in the sense that all the parameters of the model, $\{(\theta_i, \pi_i)\}_{i=1}^{n}$, as well as ρ, are assumed to be identical across cases. This allows us to introduce the key ideas in a simplified setting. We then extend the analysis to the general case in which types and priors vary across cases, depending on case-specific covariates X_t. This general framework is the one we use in our actual empirical work.

Our estimation procedure has two parts, which we describe in order.

Estimation: First step.   We introduce the following notation:

$$\begin{array}{llll} \textit{Priors:} & \rho \equiv \Pr(\omega_t = 1) & \textit{Voting Probs.:} & \gamma_{i,1} \equiv Pr(v_{it} = 1 | \omega_t = 1) \\ & 1 - \rho = \Pr(\omega_t = 0) & & \gamma_{i,0} \equiv Pr(v_{it} = 1 | \omega_t = 0) \end{array}$$

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[15]We argued that any equilibrium in the expressive and strategic voting models must be in cutoff strategies. In the strategic voting model, however, it is possible that equilibrium is not unique; i.e., that given a prior ρ and types (θ_i, π_i) for $i = 1, \ldots, n$, there is more than one vector of cutpoints s^{st} solving (4). Here we assume that if there are multiple equilibria, justices consistently play the same equilibrium whenever the characteristics of the problem are unchanged. It should be noted, however, that in the estimation, for any vector of conditional voting probabilities in the first stage (see Section 4), we recover the types (θ_i, π_i) uniquely.

Given this notation, the first-step estimation problem (in both the expressive as well as the strategic case) is to maximize the following reduced-form likelihood function for the votes:

$$\max_{\{\gamma_{i,1},\gamma_{i,0}\}_{i=1}^n,\rho} \Pr(v_t) = \rho \prod_{i=1}^n \left[\gamma_{i,1}^{v_{it}}(1-\gamma_{i,1})^{1-v_{it}} \right] + (1-\rho) \prod_{i=1}^n \left[\gamma_{i,0}^{v_{it}}(1-\gamma_{i,0})^{1-v_{it}} \right] \tag{6}$$
$$\text{s.t. } \gamma_{i,1} \geq \gamma_{i,0}, \quad \forall i.$$

Conditional on the state ω_t, the individual votes v_{it} are independent across the justices i. Thus, the vector of votes v_t follows a multivariate mixture distribution, with mixing probability ρ.

Second step. Using the estimates of the two justice-specific vote probabilities $\hat{\gamma}_{i,1}$ and $\hat{\gamma}_{i,0}$, from the first step, we recover the two structural parameters, π_i and θ_i, for each justice i. Recall our earlier assumptions that justice i's private information is $s_{it} = \omega_t + \frac{1}{\theta_i}\varepsilon_{it}$, with $\varepsilon_{it} \sim \mathcal{N}(0,1)$. Then $\gamma_{i,1} \equiv 1 - \Phi\left(\theta_i[s_i^* - 1]\right)$ and $\gamma_{i,0} \equiv (1 - \Phi(\theta_i s_i^*))$. Solving these equations for θ_i and s_i^* given $\hat{\gamma}_{i,1}$ and $\hat{\gamma}_{i,0}$ (and substituting $\Phi^{-1}(\gamma_{i,1}) = -\Phi^{-1}(1-\gamma_{i,1})$) gives [16]

$$\hat{\theta}_i = \Phi^{-1}(1-\hat{\gamma}_{i,0}) - \Phi^{-1}(1-\hat{\gamma}_{i,1}); \quad \hat{s}_i = \frac{\Phi^{-1}(1-\hat{\gamma}_{i,0})}{\Phi^{-1}(1-\hat{\gamma}_{i,0}) + \Phi^{-1}(\hat{\gamma}_{i,1})} \tag{7}$$

Note that the estimate of $\hat{\theta}_i$, the precision of i's information, is given by the difference between the conditional probabilities of voting in favor of the Petitioner when the law favors the Petitioner ($\omega = 1$) and when the law favors the Respondent ($\omega = 0$). This implies that precision is increasing in the probability of correctly ruling in favor of the Petitioner ($\gamma_{i,1}$), and decreasing in $\gamma_{i,0}$, which is the probability of incorrectly ruling against the Respondent. This is very intuitive in light of the theoretical model.

The estimate of the equilibrium cutpoint, instead, is a decreasing function of the ratio between $\Phi^{-1}(\hat{\gamma}_{i,1})$ and $\Phi^{-1}(1-\hat{\gamma}_{i,0})$. Thus $\hat{s}_i$ is (roughly) decreasing in the ratio of the probability of voting correctly in favor of the Petitioner ($\gamma_{i,1}$) *relative* to the probability of correctly voting in favor of the Respondent ($1-\gamma_{i,0}$). When this ratio is large, for instance – indicating a bias towards the Petitioner – the cutpoint $\hat{s}_i$ will be small, implying that the justice requires a low informational threshold to vote in favor of the Petitioner.

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[16]Note that for each justice, we use the estimates of $\gamma_{i,0}, \gamma_{i,1}$ to recover the two quantities θ_i and s_i. For this reason, we consider a one-parameter specification of the information structure; with additional parameters, we might not have identification.

In order to recover the bias parameter π_i, we use the equilibrium voting condition, which differs between the expressive and strategic models. In the case of the expressive voting model, this is given by

$$\frac{\phi(\theta_i[\hat{s}_i - 1])}{\phi(\theta_i \hat{s}_i)} = \frac{\hat{\pi}_i^{exp}}{1 - \hat{\pi}_i^{exp}} \frac{1 - \hat{\rho}}{\hat{\rho}}, \tag{8}$$

while in the strategic voting model this is given by

$$\left[\frac{1 - \Phi(\theta_i[\hat{s}_i - 1])}{1 - \Phi(\theta_i \hat{s}_i)}\right]^{R-1} \left[\frac{\Phi(\theta_i[\hat{s}_i - 1])}{\Phi(\theta_i \hat{s}_i)}\right]^{n-R} \frac{\phi(\theta_i[\hat{s}_i - 1])}{\phi(\theta_i \hat{s}_i)} = \frac{\hat{\pi}_i^{st}}{1 - \hat{\pi}_i^{st}} \frac{1 - \hat{\rho}}{\hat{\rho}} \tag{9}$$

For both models, plugging in our estimates of θ_i and $\hat{s}_i$ into the appropriate equilibrium condition allows us to recover estimates of $\hat{\pi}_i^{exp}$ and $\hat{\pi}_i^{st}$ for the expressive and strategic models, respectively.

Note that, in recovering θ_i, it was not necessary to specify whether justices vote expressively or strategically. An assumption regarding strategic or expressive voting is required only for recovering π_i. This distinction between θ_i and π_i is a remarkable property of this problem. It implies that the precision estimate is independent of whether justices care about the court ruling or about their own vote being correct, and therefore of whether justices use the information contained in the event of them being pivotal or simply best respond to their own private information.

Accommodating Case and Justice Heterogeneity. While our foregoing discussion assumed that all cases are homogeneous, our empirical model accommodates case-level heterogeneity by allowing the reduced-form parameters of the model – which are recovered in the first step of the estimation procedure – to depend quite flexibly on observable characteristics X_t. Specifically, we parameterize justices' priors in case t, $\rho_t \equiv \Pr(\omega_t = 1)$, as a logit probability which depends on the characteristics X_t:

$$\rho(X_t; \beta) \equiv \frac{\exp(X_t'\beta)}{1 + \exp(X_t'\beta)}, \quad \in [0, 1].$$

Once the prior probability ρ_t varies across cases, so will the equilibrium strategies s_{it}^*, and hence so will the justice-specific conditional probabilities of ruling against the Respondent $\gamma_{it,1}$ and $\gamma_{it,0}$.

Accordingly, we also parameterize these probabilities to depend upon X_t (covariates for case t) and Z_i (covariates for justice i) in the following way, which also restricts $\gamma_{i,t,1} \geq \gamma_{i,t,0}$,

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for all X_t:

$$\gamma_{i,0}(\zeta, \eta) = \frac{\exp(Z_i'\zeta + X_t'\eta)}{1 + \exp(Z_i'\zeta + X_t'\eta)}, \quad \in [0, 1];$$

$$\gamma_{i,1}(\zeta, \eta, \alpha, \delta) = \frac{\gamma_{i,0} + \exp(Z_i'\alpha + X_t'\delta)}{1 + \exp(Z_i'\alpha + X_t'\delta)}, \quad \in [\gamma_{i,0}(\zeta, \eta), 1].$$

(10)

In the first stage, we estimate the parameters (β, δ, η) as well as the justice-specific variables (α_i, ζ_i) for $i = 1, \ldots, n$. For this, we maximize the following likelihood function

$$\max_{\alpha, \beta, \zeta, \eta, \delta} \sum_t \log \left[\rho(X_t; \beta) \cdot \prod_{i=1}^n \left\{ \gamma_{i,1}(\zeta, \eta, \alpha, \delta)^{v_{it}} (1 - \gamma_{i,1}(\zeta, \eta, \alpha, \delta))^{1-v_{it}} \right\} \right.$$

$$\left. + (1 - \rho(X_t; \beta)) \cdot \prod_{i=1}^n \left\{ \gamma_{i,0}(\zeta, \eta)^{v_{it}} (1 - \gamma_{i,0}(\zeta, \eta))^{1-v_{it}} \right\} \right].$$

(11)

For the second stage, we use the predicted values of $\gamma_{i,t,1}$ and $\gamma_{i,t,0}$ to recover case and justice specific values of θ_{it} and s_{it}^*, using the equations in (7). We can then compute the bias estimates solving the n equations (4) for the strategic voting model, or (1) (with equality) for the expressive voting model. Note that, when the voting probabilities $\gamma_{i.0}$ and $\gamma_{i,1}$ are case-specific and depend on the covariates X and Z, then so will the model parameters θ and π.

Identification. Clearly, identification of model parameters hinges on the identification of the reduced-form parameters from the first-stage MLE. This in turns relies crucially on the mixture structure of the votes, which are unconditionally dependent due to the unobserved state ω_t. Specifically, consider a state supreme court with $n = 9$ justices (such as Texas). In this case, the vote vector v_t can take 2^9 values, and with a large enough dataset, it is possible to estimate the probability that v_t takes each of these values by the empirical frequency. On the other hand, there are only 19 parameters (18 vote probabilities, and ρ) to estimate, thus satisfying a necessary condition for identification.[17]

At a more intuitive level, the key for identification is that the common value induces a correlation of votes in equilibrium: all justices tend to receive larger signals when the law

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[17] Moreover, the inequality $\gamma_{i,1} > \gamma_{i,0}$, which is implied by the monotone likelihood ratio property, is crucial for identification: without this assumption, the voting probabilities would only be identified up to an arbitrary classification of ω_t. This inequality resolves this classification problem by setting $\gamma_{i,1}$ ($\gamma_{i,0}$) equal to the maximum (minimum) of the two identified voting probabilities. For more details, see Hall and Zhou (2003) or the discussion in Iaryczower and Shum (2009).

favors the Petitioner, and all justices tend to receive smaller signals when the law favors the Respondent.

Suppose first that cases are homogeneous, so that justices' types and prior are invariant across cases. If justices' quality of information were large relative to their bias, and the prior relatively uninformative (say $\pi_i \approx 1/2$ for all i and $\rho \approx 1/2$), the court would "flip-flop" evenly between unanimous pro-Respondent and pro-Petitioner decisions. Now suppose that instead $\rho \approx 2/3$. Since in this case the law favors the Petitioner more frequently, justices will tend to receive large signals more frequently (moreover, to compensate for the larger prior, justices will also use strategies that are more favorable for the Petitioner). As a result, the majority of the court would rule for the Petitioner more often than before. This illustrates the first intuition: the frequency in which the majority decision favors the Petitioner tracks the prior ρ: a larger frequency corresponds to a larger estimated prior ρ.

Now suppose that we change the bias of one justice i in our previous example so that her bias is large relative to the quality of her information. Then while all other justices will alternate between sometimes finding for the Petitioner and sometimes for the Respondent, i will stay put in one decision. This illustrates the second principle at work: absence of variability in individual decisions signals large bias. Finally, return to the previous example in which all justices are moderate. As we pointed out before, if the quality of information is sufficiently high for all justices, then we would expect these to be unanimous votes. But as the quality of information of some justices is lower, these justices would disagree with the majority more often. This suggests the third principle: justices with variable voting records who tend to be in the minority are associated with a low quality of information.

Now, as it is, this identification scheme appears to penalize "maverick" justices who go against the grain by assigning them a low precision parameter. However, in the empirical work, we control for many case-specific covariates, and take into account inherent differences among justices due to political ideology, judicial experience, etc. Therefore, justices with low θ's are those who have attributes that characterize justices who vote inconsistently, *even after* taking characteristics of the case into account: these are not maverick justices, but erratic ones.

5 Bureaucrats and Politicians

Having characterized equilibrium behavior (Section 3) and having described our estimation procedure (Section 4), we can now begin to uncover the differences in type and performance of bureaucrats and politicians. In order to do so, we apply our method to decisions on criminal cases by US states' Supreme Courts. The variability in selection and retention methods across states and the common task across courts (after controlling for case-specific heterogeneity) allows us to pin down the selection and incentive effects of institutions on justices' unobservable types.

5.1 Data and Specification

The data for this project has primarily been collected from the State Court Data Project (Brace, Langer, and Hall (2000)), with additional information obtained from the Court Statistics Project at the National Center for State Courts, *Marquis' Who's Who*, and the updated version of Berry, Ringquist, Fording, and Hanson (1998). The State Court Data Project (SCDP) provides a detailed compilation of data for state Supreme Court cases in all 50 states of the United States during the years 1995 through 1998. The database contains a case-level dataset that describe the particulars of each case during this time frame, including the decision of each justice of the relevant court. The SCDP also includes a justice-level dataset, that provides data for each of the 520 justices that served on some court during the period observed, including whether the justice was elected or appointed, and whether the justice served for life or faced either reelection or reappointment to the bench. *Marquis' Who's Who* provided additional biographical information on each justice.

The courts themselves are described in depth in the Court Statistics Project (CSP), which collects data related to the administrative and legal structure of the state Courts in the United States. The basic layout shared across every state includes at least one trial court, one or more appeals courts, and a court of last resort (generally the Supreme Court). Exceptions to the basic design first include New York, in which the Supreme Court acts as an appeals court and the Court of Appeals acts as the court of last resort, and second, Oklahoma, where there are two courts of last resort dedicated to criminal and civil cases, respectively. For the purposes of this paper, the term "Supreme Court" refers to the court of last resort as it pertains to a given case. Furthermore, while cases may originate in the

trial court and move through appeals to the Supreme Court, there are many cases for which the various Supreme Courts have original jurisdiction.

Within our data, we retained those cases that were complete in their information and in which the justices sat *en banc*.[18] This left a total of 5958 criminal cases. We then pool the data across all natural courts according to the following specification.

The main variable in the analysis is voting data per se. Justices' decisions are coded as either in favor of the Petitioner or the Respondent at the Supreme Court level. This coding follows from the logic that cases which are brought before the court on appeal consider not necessarily the original issue, but more often a matter of how the law was implemented or whether the law was itself legal and appropriate.[19]

As case-specific covariates, we included basic information about the case, the parties involved, and the legal issue under consideration. These include the manner in which the State Supreme Court takes jurisdiction (Original, Appeal or Habeas Corpus), the type (whether Person, Business, or Government) of Petitioner and Respondent, the class of legal issues under consideration (issues of evidence, sentencing and jury instruction, and others), and whether a formal opinion was issued with the case as opposed to a *per curiam* opinion. It is possible that courts in some states might have a more difficult task ahead of them than others as a result of differences in the mix of cases varying in complexity. These differences might be particularly relevant between murder cases and lesser offenses, and for cases involving constitutional challenges. To account for this possibility, we include as an additional covariate whether the original crime considered was murder or not, as well as whether the death penalty was imposed by lower courts or not. We also include whether the case involved a challenge of a law based on the US or State Constitutions, and the number of legal issues considered by the supreme court in each case. On the whole, these variables summarize (in admittedly reduced-form manner) the complex appeals process leading to the heterogeneous set of cases handled by state supreme courts.

Table 7 in the Appendix summarizes the case-specific data, including the proportion of

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[18]Note that the equilibrium cutpoint of each justice will be different for each different composition of the *voting members* of the court, implying different conditional probabilities of ruling in favor of the Petitioner in each state for each configuration of *voting members*, even fixing the covariates X_t. Including only the votes in which all justices vote therefore dramatically reduces the number of parameters to be estimated. This still leaves a significant number of cases in the sample (see Table 7).

[19]For example, when a convicted murderer appeals his death sentence claiming excessive punishment, the issue before the court in this case is not whether the Petitioner (here the original defendant) is guilty of the crime, but whether the punishment is appropriate.

unanimous and minimal winning votes in each state. While a majority of cases are decided by unanimous verdict, there is also a sizable fraction of non-unanimous verdicts. Moreover, there is, on average, a smaller proportion of unanimous verdicts in courts composed of elected judges (69% of cases), than those composed of appointed judges (over 80% of cases), a pattern which is somewhat at odds with the Visser and Swank (2007) model, where justices signal only ability, but not bias.

Disentangling Selection vs. Incentive Effects. An important question addressed in this paper concerns whether elections affect judges' decisions via a selection or incentive effect. Neither effect is explicitly in the econometric model presented earlier; therefore, we assess the effects indirectly, through our choice of justice-specific covariates. Covariates which describe the justice before she became a state SC judge control for the selection effect, while covariates which vary across time as the justice is in office control for incentive effects.

We include three classes of justice-specific variables, which we call *experience* variables, *institutional* variables, and *context* variables. Experience variables include the number of years of prior judicial experience, whether each justice had prior political experience or not, and the number of years serving in the state supreme court. Institutional variables describe the selection and retention methods in the state in which the justice serves. While this has considerable variability across states in the detailed specification, we summarize this information in whether the justice was elected or appointed, and in this case, whether she was appointed for life by elected officials, appointed for one term by elected officials with a possible reappointment by the same elected officials, or appointed for one term by elected officials with a possible reappointment depending on an up-or-down decision by voters in a retention election.[20] Context variables include Brace, Langer, and Hall (2000)'s party-adjusted judicial ideology (PAJID) score for each Justice at the time of appointment (capturing selection effects) and for each case, the interaction of the institutional variables

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[20]There is further variability within these classes. In all states in which justices are originally appointed and later face a retention election, the appointment is made by the Governor from nominees selected by a nominating commission. However, the term of the appointments can vary (typically between one and three years in the original term, between six and ten years if retained). In other states, the Governor's appointment requires the confirmation Senate, and in others the appointment is a legislative action. Terms also vary. For more detail, see the website of the American Judicature Society, at http://www.judicialselection.us.

with the (updated version of) Berry et al's citizen (CIT) and government (GOV) ideology (Berry, Ringquist, Fording, and Hanson (1998)) for the relevant state in the year in which the decision was made (capturing incentive effects). The justice-specific data is summarized in Table 8 in the Appendix.

5.2 First Stage Coefficients

This section has two purposes. We begin by discussing the first-stage estimates, focusing on the statistical – as opposed to economic or substantive – significance of the variables of interest. We then present a full example of our second stage estimates to aid the interpretation of the general results. We leave the discussion of the general substantive results and the "economic" significance of covariates for the next section.

Table 1 presents the "first stage" MLE estimates of the coefficients of the common prior function $\rho(X_t)$, and of the state-contingent probabilities of ruling against the Respondent $\gamma_0(X_t, Z_{it})$ and $\gamma_1(X_t, Z_{it})$.

[Table 1 about here]

First note that all but one of the case-specific covariates have a statistically significant effect on either justices' prior belief about the case, or their conditional probability of ruling in favor of the Petitioner in each state.[21] This is important in that it suggests that our case-specific covariates are allowing us to capture significant variation among states that is due to heterogeneity in case-selection across states.

Consider now the central question of interest here: do political institutions have an effect on justices' bias and quality of information? If this were the case, political institutions would have an effect on justices' equilibrium conditional voting probabilities. We separate the discussion about the results in Table 1 into selection and incentive effects.

We begin with selection effects. Consider first PAJID, Brace et al's party-adjusted judicial ideology scores at the time of appointment. Recall that by construction, this variable captures the political "preferences" of the principal that is relevant to the selection of each justice, be it voters or elected officials. As we can see in the table, PAJID has a statistically significant effect on type, through the state-contingent probabilities of ruling against the

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[21]The sole exception here is whether the case was one in which the court had Original jurisdiction, which is statistically undistinguishable from cases of Habeas Corpus. Instead, cases in which the Court acquired jurisdiction from an appeal are statistically significantly different than these base cases.

Respondent. PAJID captures at least part of the selection effect. Now, if different institutional variables have a systematic effect on justices' type in addition to that induced by the preferences of the principal selecting individuals to the court (as measured by PAJID) then their direct effect (unaffected by context variables at the time of decision) should also capture a selection effect. The results suggest that this is in fact the case: justices in different institutional classes have statistically significant differences in their conditional voting probabilities even after controlling for variation in the context variables describing the attitudes of the voters and elected politicians. Finally for selection components, note that all the experience variables (judicial experience, political experience, and experience in the court) have a statistically significant effect on the state-contingent probabilities of ruling against the Respondent.

Consider next incentive effects. These are captured here by the interaction of the institutional variables with the context variables at the time of the decision. In fact, note that as would be expected, the context variables CIT and GOV only have non-zero effect when interacted with the institutional variables. Next, note that the measure of citizens' ideology CIT is relevant for elected justices, but does not have a statistically significant effect on the conditional voting probabilities of non-elected justices (of any class). This result is consistent with the predictions of the literature, and also with the findings of previous applied research (see Section 2). It also suggests, in particular, that up-or-down retention elections are a poor channel for the expression of citizens' preferences. In regards with the GOV measure of the ideology of elected officials, we find that – as one would expect – GOV has a statistically significant effect on the conditional voting probabilities of appointed justices that are to face political reappointment, but does not have a corresponding effect on the behavior justices appointed for life. The only somewhat unexpected result is that GOV also has a statistically significant effect on the conditional voting probabilities of elected justices. However, this result would hardly constitute an *anomaly*, as it could indicate that elected officials might be influential (through funding or campaigning) in the electoral outcomes of judicial elections.

All in all, the results of the first-stage are very compelling, and provide strong evidence of a (statistically) significant effect of political institutions on justices' prior beliefs and their equilibrium conditional voting probabilities, due to both selection effects (uniformly) and incentive effects (for justices who are either elected, or face a political reappointment).

5.3   Second Stage Estimates (Deep Parameters)

Given the first stage coefficients we can compute, for any case t with characteristics X_t, the common prior $\rho_t = \rho(X_t)$, as well as the conditional probabilities $\gamma_{i,t,0} = \gamma_0(X_t, Z_{it})$ and $\gamma_{i,t,1} = \gamma_1(X_t, Z_{it})$ that a Justice with characteristics Z_{it} in case t rules for the Petitioner when the law favors the Petitioner and when the law favors the Respondent. For a given court composition C, we can then use the predicted values of $\gamma_{i,t,1}$ and $\gamma_{i,t,0}$ for each member i of C to recover the case and justice specific values of s_{it}^*, and the "deep parameters" θ_{it} and π_{it}.

To describe the main results we fix all case-specific covariates at the state-specific sample means, and use the justice-specific covariates of the justices sitting in each state's Supreme Court. In particular, when there is more than one court composition (natural court) per state in the data (as it usually is the case), we report results for the largest natural court (LNC); i.e. the court that decided more cases than any other natural court of the same state.

5.3.1   Three Sample Courts

We begin by presenting the complete set of estimates for three sample courts – the LNCs of California, Connecticut and Texas – to aid the interpretation of the general results. (For simplicity of exposition, in Table 2, we present point estimates only. Table 6 in the Appendix provides standard errors of all "second-stage" estimates presented in Table 2.)

[Table 2 about here]

In the table, we indicate the MLE estimate of the common prior probability that the law favors the Petitioner in each state. In these examples, the prior probability of the law favoring the Petitioner is $\rho = 0.67$ for California, $\rho = 0.54$ for Connecticut, and $\rho = 0.61$ for Texas. This indicates that given their specific case selection, in all three states the common prior belief favors the Petitioner. This is a moderate effect for Connecticut, where the prior is close to the uninformative prior of $\rho = 1/2$, but more significant for Texas and California.

The first two columns present the MLE estimates of the probability that justice i rules in favor of the Petitioner when the law favors the Respondent (γ_{it0}) and when the law favors the Petitioner (γ_{it1}). Thus, for example, justice Marvin Baxter of California had

a probability of $\gamma_{it1} = 0.93$ of (correctly) ruling in favor of the Petitioner when the law favors the Petitioner, and a probability of $1 - \gamma_{it0} = 1 - 0.15 = 0.85$ of (correctly) ruling in favor of the Respondent when the law favors the Respondent. Similarly, justice Robert Berdon of Connecticut had a probability of $\gamma_{it1} = 0.97$ of (correctly) ruling in favor of the Petitioner when the law favors the Petitioner, and a probability of $1 - \gamma_{it0} = 1 - 0.03 = 0.97$ of (correctly) ruling in favor of the Respondent when the law favors the Respondent.

Column 3 presents the estimate of the quality of the information of each justice. As we pointed out earlier, this estimate is an increasing function of the difference between the probability that justice i rules in favor of the Petitioner when the law favors the Petitioner and when the law favors the Respondent. The higher quality-of-information estimate for justice Berdon (3.70) vis a vis that of justice Baxter (2.51), for example, reflects both a larger probability of (correctly) ruling for the Petitioner when the law favors the Petitioner (0.97 vs 0.93), and a lower probability of (incorrectly) ruling for the Petitioner when the law favors the Respondent (0.03 vs 0.15).

Column 4 presents the equilibrium cutpoint. This is the signal threshold s_i^* such that Justice i votes for the Respondent whenever she observes a signal below s_i^* and for the Petitioner otherwise. Thus for example while justice Berdon would vote for the Respondent after observing a signal below $s_{BER}^* = 0.49$, it would take a signal below $s_{BAX}^* = 0.41$ for justice Baxter, and a signal below $s_{BAI}^* = 0.38$ for justice Charles Baird from Texas to rule in favor of the Respondent. As we noted before, the cutpoint estimate for each justice i is a decreasing function of the ratio between $\Phi^{-1}(\hat{\gamma}_1)$ and $\Phi^{-1}(1 - \hat{\gamma}_0)$. To illustrate this in the context of our example, this ratio is $1.03 = 1.88/1.82$ for justice Berdon, $1.46 = 1.48/1.02$ for justice Baxter, and $1.64 = 1.56/0.95$ for justice Baird.

Given the estimates, we can also understand the ordering of equilibrium cutpoints in terms of the case specific prior and the justice/case specific type of each justice. First, for Berdon, Baxter and Baird, the prior stacks the deck in favor of the Petitioner, and contributes to a larger equilibrium cutpoint for all justices (more so for Baxter and Baird, moderately so for Berdon). The second factor at play here is the bias of the justice in question (and in the strategic voting model, also of the remaining justices in the court, through their equilibrium strategy s_{-i}^*). The justices' bias are shown in columns 5 and 6 in the table. Note that in both the strategic and the expressive voting models, justice Baird of Texas is more inclined to rule in favor of the Petitioner than justice Berdon of Connecticut,

and him in turn more than justice Baxter of California. In the expressive voting model, for example, for the type of case each of these justices "typically" faces, justice Baird requires less evidence (a belief of at least $\pi_{BAI}^{exp} = 042$ that the law favors the Petitioner) to rule in favor of the Petitioner than justice Berdon ($\pi_{BER}^{exp} = 0.51$) and justice Baxter ($\pi_{BAX}^{exp} = 0.53$). The third factor is the quality of information of each justice. A larger quality of information θ_i pushes i's cutpoints towards $1/2$, the threshold of an "unbiased" justice. This explains why in equilibrium Berdon uses a "much more moderate" strategy than Baxter in both the strategic and the expressive voting models.

Column 7 indicates for each justice i, the ratio of the probability that i is pivotal when other justices follow their equilibrium strategies and the law favors the Petitioner and the corresponding probability when the law favors the Respondent. We can see in the Table that in equilibrium, in California, Connecticut and Texas the event of being pivotal conveys favorable information for the Respondent. This is why in all three states justices are more biased in favor of the Petitioner in the strategic voting model than in the expressive voting model: in order to be consistent with the same cutpoint as in the expressive voting model, a justice has to be more "biased" towards the Petitioner (Respondent) whenever the equilibrium information favors the Respondent (Petitioner).

Given these estimates, we can compute a measure of the value of information in the court, as introduced in Iaryczower and Shum (2009). The measure, FLEX, is the probability that justice i votes differently than what she would have voted for in the absence of her private case information:

$$FLEX_{it} = \begin{cases} \rho_t \Phi(\theta_{it}[s_{it}^* - 1]) + (1 - \rho_t)\Phi(\theta_{it}s_{it}^*) & \text{if } \rho_t \geq \pi_{it} \\ \rho_t[1 - \Phi(\theta_{it}[s_{it}^* - 1])] + (1 - \rho_t)[1 - \Phi(\theta_{it}s_{it}^*)] & \text{if } \rho_t < \pi_{it}. \end{cases} \tag{12}$$

Note that FLEX is bounded between zero and one, and takes a value of zero for individuals with extremely large biases either for the Petitioner ($\pi \to 0$) or for the Respondent ($\pi \to 1$).[22] Note, moreover, that FLEX scores integrate information about the quality of information and bias of each justice. The FLEX scores for the expressive and strategic

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[22] Note also that the computation of FLEX for the expressive and strategic voting models differ only in whether we use π_i^{exp} or π_i^{st} to evaluate whether $\rho \geq \pi_i$ or $\rho \leq \pi_i$. The reason for this is that the equilibrium cutpoint s_i^* that is recovered from the data is invariant to whether we use the expressive or strategic voting models. Together with the data, the two models imply the same s_i^* and θ_i, and differ only in the biases π_i that rationalize these quantities. As a result, in practical terms this means that the expressive and strategic FLEX scores for any given justice and any given realization of the covariates X_t are very often identical. If instead we were initially given values of $\{\pi_i, \theta_i\}$ and ρ, then the two models would imply a different equilibrium cutpoint s_i^*, and FLEX scores in the two models would differ significantly.

voting models are presented in columns 8 and 9 of the table. Consistent with our previous remarks, the value of information in the court is on average higher for justices in Connecticut than for justices in California and Texas.

5.3.2 Main Results

We can now begin to answer the questions that we laid out at the beginning of the paper. Our goal is to understand the differences in type and performance of appointed and elected justices.

Table 3 presents the state averages (of the individual estimates for each justice i in the LNC of each state) of the prior probability that the law favors the Petitioner, the conditional probabilities of voting in favor of the Petitioner when the law favors the Respondent and the Petitioner $(\gamma_{i,0}, \gamma_{i,1})$, the equilibrium strategy cutpoint s_i^*, and the justice type (θ_i, π_i). As in Table 2, the estimates for each court are computed here with case-specific variables evaluated at their state-specific sample means, and individual justices evaluated at their own justice-specific variables (i.e., Table 3 presents the averages of the table 2 estimates for each of the fifty state courts). The states are arranged in four groups, according to the broad class of institutions for selection and retention they use. The first is the group of states in which justices are elected in competitive plurality elections. The second group includes states in which justices are originally appointed by elected officials, but face an up-or-down decision by voters in a retention election to retain their position in the court. The third group includes states in which justices are appointed by elected officials, and considered for reappointment after a first term also by elective officials. The fourth group includes states in which justices are appointed by elected officials for life.[23]

[Table 3 about here]

We pointed out in Section 5.2 that our case-specific covariates have a statistically significant effect on the prior probability that the law favors the Petitioner. Table 3 shows that they are also substantively significant. The substantial variation in priors across states suggests that we are able to control for what is a significant heterogeneity in case-selection across states. The inclusion of these case-specific variables is important to assure that

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[23]We include New Jersey in this group because upon being reappointed, justices are appointed for life. Illinois, New Mexico and Pennsylvania have up-or-down retention elections for reappointment.

the remaining variation in types is due to institutional factors and not to unaccounted heterogeneity in the type of cases considered by each court.

Table 3 shows that the different institutions for election and retention of justices have a significant impact on the quality (θ) and value of information ($FLEX$) in the court. First, justices that do not face any kind of voter evaluation after being appointed on average have higher quality of information than justices that face either reelection or retention elections. In fact, the information quality for justices appointed for life and justices that are appointed and reappointed is on average 25% larger than that of justices facing retention elections, and 30% larger than that of justices that are elected. The effects are substantively and statistically significant.

The institutions of selection and retention of justices also influence justices' predisposition to rule in favor or against the Respondent, as measured by π. In particular, justices that do not face any kind of voter evaluation after being appointed are on average more biased than those who do (in both the expressive and strategic voting models). However, these differences in bias across voting institutions are less striking than the differences in quality. In the expressive voting model, for example, the average elected justice would rule in favor of the Respondent only if after all information is taken into consideration, the posterior probability that the law favors the Petitioner is below $E[\pi^{exp}|elected] = 0.41$. Instead, the average justice appointed subject to a reappointment would rule in favor of the Respondent only if the posterior probability that the law favors the Petitioner is below $E[\pi^{exp}|Reapp] = 0.40$, and the average justice appointed for life only if it is below $E[\pi^{exp}|life] = 0.37$.

The preceding results imply that, in determining the value of information in the court, differences in information quality across institutional environments trump differences in bias. As was the case with the quality of information, FLEX scores are also larger on average the more isolated justices are from voters. The average FLEX score for elected justices (0.36) is lower than that of appointed justices facing retention elections (0.38), this in turn lower than that for appointed justices facing political reappointment (0.39), and this is turn lower than that for justices appointed for life (0.41).

Selection and Incentive Effects & Case Heterogeneity. In Table 3 we computed the estimated type of justices in different states allowing all case-specific and justice-specific

covariates to vary. This is the appropriate exercise to obtain the *total* effect of political institutions on justices' bias and quality of information. In this section, we complement these results in two ways.

First, it is important to establish that differences in type are not just due to heterogeneity in case-selection across states. Note that since we allow justices' types to vary in response to changes in case-specific covariates, then – even after controlling for variation in our case-specific covariates in the estimation – the previous results reflect differences in case-selection across states. In order to eliminate completely heterogeneity in case-selection, we recompute the types of justices in the LNC of each state fixing case-specific covariates at the national sample mean. In Table 4 (column 2), we report the state averages of the bias and quality of information fixing case-specific covariates at the national sample mean. Comparing these results with our benchmark result (column 1) shows that differences in type persist even after we impose a homogeneous caseload across state courts: the patterns we uncovered in types across institutions are not due to heterogeneous case-selection. The first main message in Table 4 then, is that it is indeed institutions that drive the main results.

Second, note that justices differ not only in the selection and retention methods they face, but also in observable characteristics at the time of their appointment (PAJID, prior judicial and political experience), in their experience in the court at the time of the decision, and in the context they face at the time of the decision (CIT and GOV measures of citizen and government ideology). As a result, Table 3 lumps together the impact that institutions have on the bias and information quality of justices through the incentives they provide for individuals to advance their political and judicial careers, with that caused by their systematic effect on the selection of justices of different types. To disentangle these incentive and selection effects, we recompute the type estimates fixing case-specific covariates at the national sample mean *and* justices' PAJID scores and experience variables (prior political, prior judicial, and in the court) at their average for all justices in LNCs. The residual within-class variation can be attributed to the forward-looking impact of institutions through the incentives they provide justices to advance their political and judicial careers. We report the state averages of the bias and quality of information computed in this way in the third column/s of Table 4.

[Table 4 about here]

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The results suggest that incentive effects are mainly circumscribed to elected positions. Consider first non-elected justices facing up-or-down retention elections. Note that fixing PAJID scores and experience among justices eliminates practically all variability in types across justices in this class. Since incentive effects are context specific – and thus state specific as well – this indicates a weak incentive effect for justices facing retention elections. It follows that almost all of the variability in justices' types across states with retention elections for justices can be attributed to heterogeneity in case selection, selection effects (PAJID, judicial and political experience) and differences in experience in the court. A similar conclusion can be drawn for the other classes of appointed justices, although in these cases fixing PAJID scores and experience among justices cannot account for all variability in types within class.[24]

For elected justices, the opposite is true. Note that in columns 1 and 2, the quality of information of elected justices has a similar average and variability than that of non-elected justices facing retention elections. But fixing PAJID scores and experience among elected justices leaves almost all within-group variability in bias and quality of information unaccounted for. This suggests that differences in selection (PAJID, judicial and political experience) and experience in the court have a relatively small impact on the type of elected justices. Thus, as long as our selection and experience variables capture selection effects adequately, the bulk of the variability in types of elected justices must be attributed to incentive effects.

5.4   Effectiveness of Bureaucrats and Politicians

Tables 3 and 4 focused on how selection and retention procedures impact justices's bias and quality of information. Ultimately, however, we care about this because of how it impacts on outcomes. In our next results, we switch attention from the type of justices to their performance: is there a systematic difference in the performance of elected and appointed justices? In the context of the common value voting model, a natural measure of performance is the probability of a mistake in the decision of the court. In this section we use the estimated individual conditional voting probabilities to compute this probability.

Fix a court j. Note that for any given case characteristics X, our first stage estimates

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[24]Note however that the incentive effects for this class are also more imprecise, as the context variables are not statistically significant for non-elected justices (see Table 1).

provide the probability that a member i of court j votes for the Respondent when the law favors the Petitioner $1 - \gamma_{i,1}$, and for the Petitioner when the law favors the Respondent, $\gamma_{i,0}$ (we drop the obvious dependence on X to simplify notation). For a simple majority rule, we can then use these individual conditional probabilities to compute the probability that court j will rule for the Respondent when the law favors the Petitioner, $\Pr(v_j = 0 | \omega = 1)$, and for the Petitioner when the law favors the Respondent, $\Pr(v_j = 1 | \omega = 0)$.[25] Given a prior ρ_j, we can then compute the total probability of an incorrect ruling for court j,

$$\beta_j^{SM} = \rho_j \Pr(v_j = 0 | \omega = 1) + (1 - \rho_j) \Pr(v_j = 1 | \omega = 0)$$

Figure 1 shows the probability of an incorrect ruling in each state ω (in favor of the Respondent when the Petitioner should win, and in favor of the Petitioner when the Respondent should win) and the ex ante probability of an incorrect ruling of any kind, per state.

[Figure 1 about here]

The total probability of an incorrect ruling β_j^{SC} (the bars in the figure) ranges from under 0.1% for the top five states – New York, Connecticut, New Jersey, Rhode Island, and Massachusetts – to between 1.4% and 4% for the bottom five states – North Carolina, Georgia, Kentucky, Nevada and Idaho. Thus, even when individual members have a much larger probability of making a wrong decision (see Table 3), the "wisdom of the majority" implies that state supreme courts have a relatively low total error rate.

However, the pattern of mistakes is highly asymmetric. On the one hand, the probability of an incorrect ruling in favor of the Respondent when the Petitioner should win is very low, with most courts having a negligible probability of a mistake of this kind (the exceptions being Tennessee and Colorado). On the other hand, more than fifteen courts have a probability above 2% of reaching an incorrect decision in favor of the Petitioner when the Respondent should win. In fact, this probability is above 4% for the bottom five courts, and above 6% for the bottom three.

This asymmetry should come as no surprise given our previous results in Table 3. Note that in forty three of the fifty states, the mean individual probability of ruling for the

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[25]Letting $\mathcal{C}(k)$ denote the set of coalitions with exactly k members, $\Pr(v_j = 0 | \omega = 1) = \sum_{k=5}^{9} \sum_{C \in \mathcal{C}(k)} \prod_{i \in C} (1 - \gamma_{i,1}) \prod_{i \notin C} \gamma_{i,1}$, and $\Pr(v_j = 1 | \omega = 0) = \sum_{k=5}^{9} \sum_{C \in \mathcal{C}(k)} \prod_{i \in C} \gamma_{i,0} \prod_{i \notin C} (1 - \gamma_{i,0})$.

Respondent when the Petitioner should win $(1 - \gamma_{i,1})$ is strictly smaller than the mean individual probability of ruling for the Petitioner when the Respondent should win $(\gamma_{i,0})$, and in only one state (Colorado) the difference is large in size towards the Respondent. In other words, at the individual level, on average, justices make comparatively large mistakes in favor of the Petitioner. This is particularly true for elected justices, for whom on average $1 - \gamma_{i,1} \approx 4\%$ and $\gamma_{i,0} \approx 16\%$. The steep asymmetry in type I and type II errors implies that almost all of the overall probability of a mistake of any kind is explained by (i) the probability of an incorrect decision in favor of the Petitioner and (ii) the prior probability ρ_j that court j finds itself in the state of nature in which it makes comparatively fewer mistakes.

Aggregating the court effectiveness results by institutional class reinforces the conclusions that we emphasized in the discussion of Table 3. We established there that justices that do not face any kind of voter evaluation after being appointed on average have higher quality of information than justices that face either reelection or retention elections. We also established there that – as a result of the fact that the institutions of selection and retention of justices affect justices' type predominantly through their impact on the quality of information – the same is true for the value of information in the court. The same conclusion follows here. Quality of information, the value of information (FLEX scores), and the effectiveness of the court (the probability of a correct decision) are all larger on average the more shielded from voters justices are. Specifically, justices appointed for life and appointed justices with a political reappointment on average have a lower probability of reaching an incorrect decision (0.1%) than justices that are appointed and face retention elections (0.4%), and than justices that are elected (0.9%). The effect is larger when we consider the probability of reaching an incorrect decision in favor of the Petitioner. In this case, the corresponding probabilities are 0.3% for justices that are isolated from voters, 1.1% for justices facing retention elections and 2.6% for justices facing competitive reelections.

5.4.1 Counterfactuals: Can Unanimity Rule Improve Performance?

Can Unanimity Rule Improve Performance? A natural question here is how the effectiveness of State Supreme Courts would change if the current method by which they aggregate the votes of its individual members (simple majority rule) were replaced with a different

decision-making rule. In particular, because of the asymmetry in the pattern of mistakes in favor of the Petitioner, it is especially interesting to compare the performance of the courts under the current rules with a counterfactual scenario in which ruling against the Respondent requires the unanimous consent of all members.

To evaluate this, we need to compute the probability of mistakes under unanimity. In the expressive voting model, this is straightforward. Here behavior is unaffected by the aggregation mechanism, and therefore so are the individual strategy cutpoints and conditional probabilities. The only change is in the aggregation rule. Here the probability of the court ruling for the Respondent when the law favors the Petitioner is $1 - \prod_{i=1}^{n_j}(1 - \gamma_{i,1})$ and the probability of the court ruling for the Petitioner when the law favors the Respondent is $\prod_{i=1}^{9} \gamma_{i,0}$. Thus the total probability of an incorrect ruling for the Supreme Court under unanimity rule in the expressive voting model is $\beta_j^{U,exp}$

$$\beta_j^{U,exp} = \rho_j \left[1 - \prod_{i=1}^{n_j}(1 - \gamma_{i,1}) \right] + (1 - \rho_j) \left[\prod_{i=1}^{n_j} \gamma_{i,0} \right]$$

In the strategic voting model, the computation of the total probability of mistakes under unanimity rule requires an additional step because the aggregation mechanism now clearly affects equilibrium behavior. Thus we cannot use the conditional probabilities of ruling for the Respondent recovered from justices' votes, but rather we must recompute the behavioral probabilities that are consistent with equilibrium behavior under unanimity. Fortunately, this is not difficult to do given our previous results. Given our estimates $\{(\pi_i^{st}, \theta_i)\}$ we can use Eq. (4) with R to compute the equilibrium strategy cutpoints s_i^{**} consistent with unanimity rule. Given s^{**}, we can then compute $\gamma_{i,1}^{**} = 1 - \Phi(\theta_i[s_i^{**} - 1])$ and $\gamma_{i,0}^{**} = 1 - \Phi(\theta_i s_i^{**})$. Then the total probability of an incorrect ruling for the Supreme Court under unanimity rule in the strategic voting model $\beta_j^{U,st}$ is

$$\beta_j^{U,st} = \rho_j \left[1 - \prod_{i=1}^{n_j}(1 - \gamma_{i,1}^{**}) \right] + (1 - \rho_j) \left[\prod_{i=1}^{n_j} \gamma_{i,0}^{**} \right]$$

Table 5 shows the results per state, grouped as before by class of political institution. The results show that introducing the change to unanimity rule would have major consequences to public outcomes and the effectiveness of the courts.

[Table 5 about here]

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Consider first the expressive voting model. If justices care about their own vote only, replacing majority rule by unanimity rule does achieve the purpose of reducing the probability of an incorrect court decision in favor of the Petitioner (column 4 in the table). On the flip side, this is achieved by dramatically increasing the probability of an incorrect court decision in favor of the Respondent (reaching 33% for elected justices, and 35% for non-elected justices facing retention elections).

The strategic voting model also predicts large changes in outcomes as a result of the change in the voting rule. Here, however, the changes occur in the opposite direction. As a result of the move to unanimity, strategic justices who care about the decision of the court would modify their strategy in equilibrium. And because the event of being pivotal (all other $n_j - 1$ members voting to rule in favor of the Petitioner) here carries favorable information for the Petitioner, in equilibrium all justices become harsher against the Respondent (so as to tilt the equilibrium inference in favor of the Respondent; see Feddersen and Pesendorfer (1998)). As a result, the move to unanimity significantly increases the probability of a mistaken decision *against* the Respondent (reaching a maximum of 21% for elected justices).

6   Conclusion

What separates bureaucrats from politicians ? This fundamental question for representative democracy has three parts. First, do voters select a different type of public official – more or less biased, better or worst at gathering and processing information –than government officials? Second, do reelections induce public officials to improve their proficiency to deal with the flow of information of each decision? Do they induce them to be more responsive to the public? Third, are bureaucrats more effective than politicians?

In order to answer these questions, we need to map institutions to the type of public officials they induce. The difficulty, of course, is that this type is unobservable. The contribution of this paper is to bridge this gap by specifying a decision-making model, and using equilibrium information to recover the unobservable types. The main idea is to exploit the information contained in the joint observation of the votes of members of committees that deal with issues involving both ideological considerations and common values. The underlying common value induces correlation in actions (votes) in equilibrium, which allows us to disentangle bias and quality of information.

We focus on criminal decisions in US states' Supreme Courts. The main results we obtain clarify the trade-offs inherent in choosing between bureaucrats and politicians. First, justices that are shielded from voters' evaluations on average have higher quality of information than justices that face either reelection or retention elections. In fact, the information quality for justices that are shielded from voters' influence (those appointed for life and those appointed and reappointed by elected officials) is on average 25% larger than that of justices facing retention elections, and 30% larger than that of justices that are elected. Institutions of selection and retention of justices also affect justices' bias (justices that are not shielded from voters are more moderate on average), but this effect is more modest in magnitude. As a result, differences in information quality across jurisdictions trump differences in bias, and justices who are shielded from voters not only have better information, but are also more likely than elected justices to change their preconceived opinions about a case, and have a better performance (lower probability of making incorrect decisions) than elected justices.

Finally, we show that while the pattern of mistakes of state supreme courts is highly asymmetric – with the courts making comparatively large mistakes in favor of the Petitioner – changing the voting rule to a rule more protective of the Respondent would produce major consequences to public outcomes and the effectiveness of the courts. Thus any such change should be considered with great care.

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Table 1: "First Stage" MLE Estimates (standard errors in parenthesis.)

		ρ	γ_{it0}	γ_{it1}
Case Specific	Constant	0.467 (0.375)	-1.144 (0.291)	-0.870 (0.402)
	Original	-0.095 (1.163)	0.061 (0.548)	0.279 (1.338)
	Appeal	-1.209 (0.186)	-1.039 (0.105)	0.459 (0.122)
	Plaintiff Person	0.668 (0.306)	-0.309 (0.219)	4.159 (0.295)
	Plaintiff Business	-0.340 (1.187)	0.184 (0.231)	-1.636 (0.497)
	Defendant Person	-1.334 (0.296)	-1.919 (0.227)	2.461 (0.295)
	Defendant Business	0.572 (0.569)	0.732 (0.223)	-1.848 (0.348)
	Murder Case	-0.085 (0.101)	0.431 (0.060)	0.334 (0.109)
	Issues	0.110 (0.027)	0.105 (0.014)	0.279 (0.030)
	Evidence	0.242 (0.086)	0.323 (0.055)	-0.365 (0.072)
	Jury Instruction	0.228 (0.091)	0.324 (0.054)	-0.241 (0.080)
	Death Penalty	0.225 (0.138)	-0.370 (0.085)	-1.444 (0.127)
	Formal Opinion	0.347 (0.108)	0.538 (0.076)	-1.048 (0.110)
	Judicial Review (US Constitution)	0.500 (0.265)	-0.826 (0.159)	0.171 (0.224)
	Judicial Review (State Constitution)	-0.042 (0.220)	0.293 (0.116)	0.874 (0.241)

		ρ	γ_{it0}	γ_{it1}
Justice Specific	PAJID	-	-0.011 (0.002)	0.001 (0.001)
	Elected	-	0.791 (0.142)	-0.112 (0.174)
	Life	-	-0.166 (0.639)	0.846 (0.900)
	Reappt	-	0.395 (0.519)	1.118 (0.502)
	CIT	-	0.000 (0.000)	0.000 (0.000)
	GOV	-	0.000 (0.000)	0.000 (0.000)
	CIT x Elected	-	-0.011 (0.003)	0.018 (0.004)
	CIT x Reappt.	-	-0.008 (0.014)	-0.002 (0.008)
	CIT x Life	-	0.004 (0.020)	0.010 (0.029)
	GOV x Elected	-	0.008 (0.001)	-0.013 (0.002)
	GOV x Reappt.	-	0.000 (0.003)	0.002 (0.004)
	GOV x Life	-	-0.006 (0.007)	-0.006 (0.007)
	Judicial Experience	-	-0.027 (0.006)	0.013 (0.007)
	Political Experience	-	-0.566 (0.111)	-0.151 (0.140)
Justice/Case Specific	Years of Experience in the Court	-	0.001 (0.000)	-0.029 (0.007)

Table 2: Full Set of Estimates for there sample courts: California, Connecticut and Texas (case-specific covariates fixed at state sample average; individual justices evaluated at their own justice-specific covariates)

	Justice	γ_{i0}	γ_{i1}	θ	s^*	π^{exp}	π^{ST}	$L(piv)$	FLEXST	FLEX^{exp}
California (ρ =0.67)	Baxter, Marvin R.	0.154	0.931	2.502	0.408	0.531	0.209	0.226	0.326	0.326
	Chin, Ming W.	0.155	0.943	2.597	0.392	0.493	0.198	0.245	0.318	0.318
	George, Ronald M.	0.131	0.935	2.632	0.426	0.548	0.212	0.215	0.331	0.331
	Kennard, Joyce L.	0.150	0.928	2.495	0.415	0.544	0.213	0.219	0.329	0.329
	Mosk, Stanley	0.037	0.847	2.812	0.636	0.856	0.374	0.097	0.420	0.580
	Werdegar, Kathryn M.	0.152	0.937	2.557	0.403	0.516	0.205	0.233	0.323	0.323
	Brown, Janice Rogers	0.177	0.940	2.485	0.373	0.480	0.198	0.259	0.312	0.312
Connecticut (ρ = 0.54)	Berdon, Robert I.	0.034	0.970	3.700	0.492	0.510	0.145	0.162	0.464	0.464
	Borden, David M.	0.029	0.976	3.875	0.491	0.502	0.146	0.169	0.463	0.463
	Callahan, Robert J.	0.041	0.969	3.614	0.482	0.478	0.136	0.171	0.461	0.461
	Katz, Joette	0.089	0.971	3.246	0.415	0.321	0.112	0.267	0.438	0.438
	Norcott Jr,, Flemming L.	0.069	0.974	3.423	0.433	0.344	0.112	0.239	0.445	0.445
	Peters, Ellen Ash	0.061	0.956	3.257	0.475	0.471	0.131	0.170	0.459	0.459
	Palmer, Richard N.	0.059	0.971	3.457	0.451	0.392	0.119	0.210	0.452	0.452
Texas (ρ = 0.61)	Baird, Charles F.	0.171	0.940	2.505	0.380	0.424	0.016	0.021	0.360	0.360
	Clinton, Sam Houston	0.187	0.921	2.299	0.387	0.462	0.017	0.019	0.365	0.365
	Keller, Sharon	0.208	0.947	2.435	0.334	0.369	0.015	0.024	0.341	0.341
	Maloney, Frank	0.176	0.942	2.500	0.373	0.414	0.016	0.021	0.356	0.356
	Mansfield, Steve	0.208	0.949	2.449	0.333	0.365	0.014	0.024	0.340	0.340
	McCormick, Michael J.	0.185	0.925	2.333	0.384	0.454	0.017	0.019	0.363	0.363
	Meyers, Lawrence E.	0.191	0.946	2.483	0.353	0.387	0.015	0.023	0.348	0.348
	Overstreet, Morris L.	0.161	0.942	2.561	0.387	0.427	0.016	0.021	0.362	0.362
	White, Bill M.	0.170	0.931	2.440	0.391	0.450	0.017	0.019	0.365	0.365

Table 3: Type, Prior, Strategy and Conditional Voting Probabilities, on average, per state (case-specific covariates fixed at state sample average; individual justices evaluated at their own justice-specific covariates)

Institution	State	ρ	γ_{it0}	γ_{it1}	θ	s^*	π^{exp}	π^{st}	FLEX^{exp}	FLEXst
	Alabama	0.519	0.138	0.873	2.251	0.487	0.499	0.418	0.486	0.480
	Arkansas	0.656	0.193	0.964	2.676	0.324	0.353	0.006	0.301	0.301
	Georgia	0.653	0.253	0.952	2.335	0.285	0.374	0.008	0.290	0.290
	Idaho	0.649	0.174	0.958	2.674	0.352	0.392	0.048	0.317	0.317
	Illinois	0.627	0.104	0.926	2.790	0.462	0.537	0.271	0.396	0.381
	Kentucky	0.658	0.241	0.938	2.265	0.313	0.425	0.022	0.300	0.300
	Louisiana	0.389	0.086	0.889	2.621	0.527	0.430	0.593	0.470	0.398
	Michigan	0.355	0.052	0.922	3.063	0.534	0.428	0.698	0.397	0.360
	Minnesota	0.595	0.178	0.956	2.657	0.352	0.351	0.012	0.359	0.359
	Mississippi	0.678	0.221	0.956	2.482	0.311	0.403	0.002	0.281	0.281
	Montana	0.620	0.157	0.964	2.824	0.361	0.360	0.010	0.343	0.343
Elected	Nevada	0.664	0.186	0.963	2.702	0.334	0.383	0.034	0.299	0.299
	New Mexico	0.572	0.142	0.949	2.712	0.395	0.385	0.089	0.396	0.396
	North Carolina	0.730	0.321	0.958	2.215	0.210	0.401	0.004	0.214	0.214
	North Dakota	0.592	0.137	0.960	2.882	0.385	0.371	0.058	0.376	0.376
	Ohio	0.586	0.108	0.967	3.102	0.403	0.365	0.020	0.389	0.389
	Oregon	0.639	0.113	0.921	2.634	0.461	0.574	0.337	0.370	0.370
	Pennsylvania	0.721	0.193	0.956	2.594	0.337	0.466	0.016	0.257	0.257
	Texas	0.610	0.184	0.939	2.452	0.368	0.414	0.015	0.355	0.355
	Washington	0.527	0.109	0.931	2.741	0.454	0.448	0.138	0.463	0.457
	West Virginia	0.615	0.122	0.982	3.283	0.357	0.260	0.009	0.349	0.349
	Wisconsin	0.412	0.065	0.923	2.972	0.516	0.448	0.571	0.479	0.418
	Average	**0.594**	**0.158**	**0.943**	**2.678**	**0.388**	**0.412**	**0.154**	**0.358**	**0.350**
	Alaska	0.587	0.072	0.956	3.199	0.462	0.493	0.280	0.436	0.409
	Arizona	0.736	0.159	0.960	2.758	0.363	0.496	0.075	0.252	0.252
	California	0.669	0.136	0.924	2.589	0.435	0.564	0.222	0.360	0.337
	Colorado	0.393	0.044	0.855	2.791	0.618	0.618	0.977	0.363	0.363
	Florida	0.624	0.076	0.934	2.960	0.488	0.601	0.509	0.509	0.389
	Indiana	0.699	0.171	0.956	2.667	0.357	0.459	0.068	0.280	0.280
	Iowa	0.467	0.056	0.932	3.094	0.517	0.511	0.648	0.489	0.465
Appointed, with	Kansas	0.606	0.127	0.948	2.793	0.412	0.445	0.066	0.375	0.375
Voter Retention	Maryland	0.560	0.049	0.916	3.063	0.545	0.654	0.895	0.534	0.534
	Missouri	0.743	0.177	0.957	2.654	0.351	0.507	0.023	0.244	0.244
	Nebraska	0.590	0.104	0.946	2.893	0.440	0.471	0.129	0.399	0.399
	Oklahoma	0.777	0.173	0.910	2.301	0.411	0.690	0.194	0.254	0.254
	South Dakota	0.610	0.108	0.956	2.953	0.420	0.439	0.129	0.374	0.374
	Tennessee	0.569	0.070	0.907	2.819	0.527	0.622	0.735	0.522	0.547
	Utah	0.643	0.138	0.930	2.572	0.424	0.521	0.244	0.353	0.353
	Wyoming	0.651	0.132	0.938	2.680	0.421	0.518	0.217	0.344	0.344
	Average	**0.620**	**0.112**	**0.933**	**2.799**	**0.450**	**0.538**	**0.338**	**0.381**	**0.370**
	Connecticut	0.536	0.055	0.970	3.510	0.463	0.431	0.129	0.455	0.455
	Delaware	0.698	0.124	0.976	3.168	0.371	0.403	0.031	0.281	0.281
	Hawaii	0.617	0.055	0.981	3.688	0.436	0.410	0.084	0.373	0.373
Appointed, with	Maine	0.647	0.091	0.979	3.395	0.398	0.373	0.009	0.334	0.334
Reappointment	New York	0.521	0.048	0.974	3.623	0.460	0.394	0.095	0.469	0.469
	South Carolina	0.534	0.045	0.963	3.493	0.486	0.493	0.396	0.489	0.465
	Vermont	0.597	0.049	0.985	3.842	0.434	0.363	0.055	0.392	0.392
	Virginia	0.671	0.113	0.977	3.247	0.377	0.362	0.006	0.308	0.308
	Average	**0.603**	**0.073**	**0.976**	**3.496**	**0.428**	**0.404**	**0.100**	**0.388**	**0.385**
	Massachusetts	0.600	0.076	0.981	3.559	0.409	0.333	0.009	0.381	0.381
Appointed,	New Hampshire	0.639	0.114	0.971	3.130	0.389	0.384	0.045	0.338	0.338
for Life	New Jersey	0.444	0.055	0.954	3.305	0.489	0.421	0.320	0.500	0.546
	Rhode Island	0.563	0.046	0.988	4.015	0.432	0.329	0.036	0.424	0.424
	Average	**0.561**	**0.073**	**0.974**	**3.502**	**0.430**	**0.367**	**0.102**	**0.411**	**0.422**
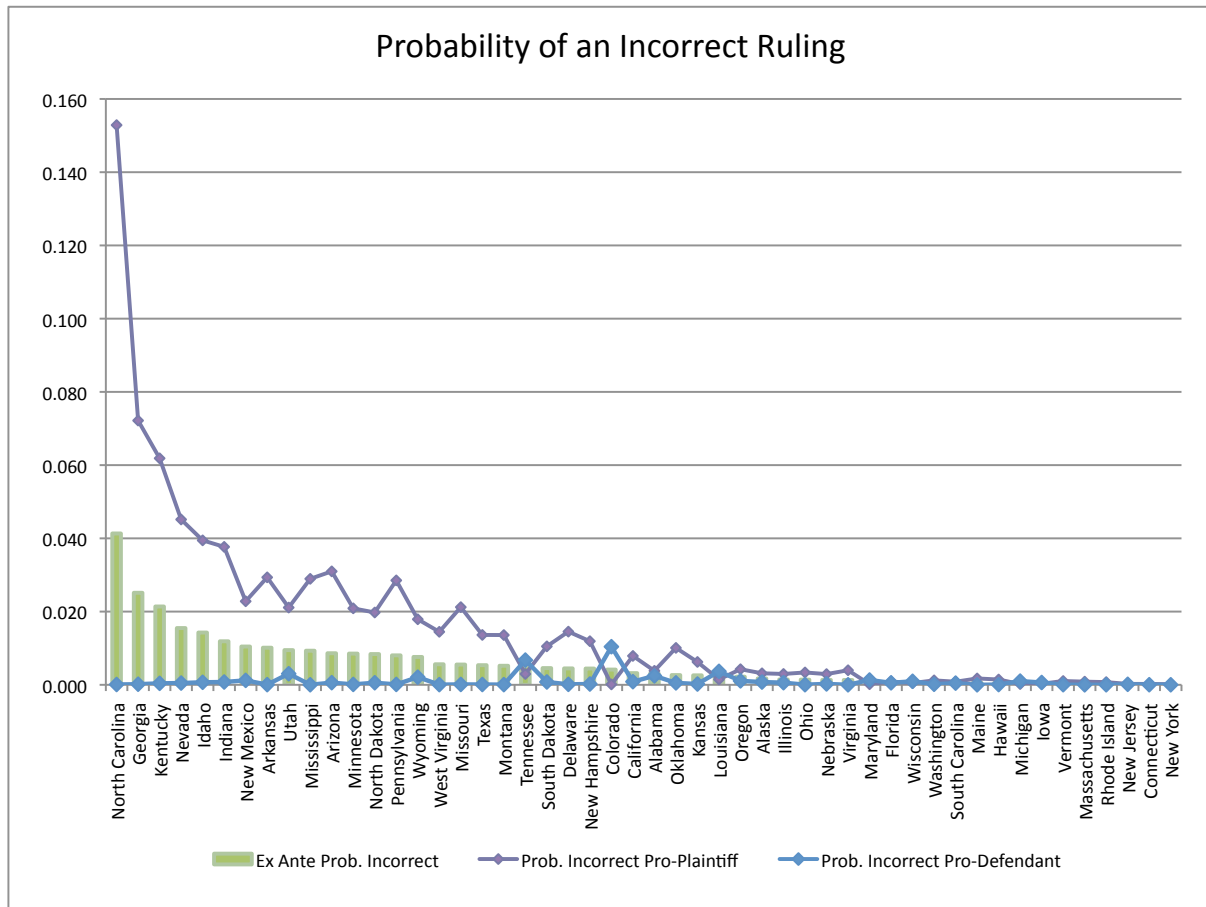
Figure 1: Probability of an incorrect decision at the Court level. Type I and type II errors.

Table 4: Selection and Incentives

Institution	State	Quality of Information			Bias (Expressive)		
		Actual Courts	Fixed Case	Fixed Case, Selection & Experience	Actual Courts	Fixed Case	Fixed Case, Selection & Experience
Elected	Alabama	2.251	2.418	2.565	0.499	0.405	0.417
	Arkansas	2.676	2.631	2.625	0.353	0.391	0.411
	Georgia	2.335	2.365	2.185	0.374	0.438	0.460
	Idaho	2.674	2.710	2.686	0.392	0.375	0.401
	Illinois	2.790	2.968	2.892	0.537	0.430	0.380
	Kentucky	2.265	2.266	2.222	0.425	0.453	0.456
	Louisiana	2.621	2.480	2.534	0.430	0.420	0.420
	Michigan	3.063	2.950	2.933	0.428	0.405	0.373
	Minnesota	2.657	2.720	2.716	0.351	0.388	0.400
	Mississippi	2.482	2.478	2.491	0.403	0.428	0.424
	Montana	2.824	2.789	2.920	0.360	0.347	0.374
	Nevada	2.702	2.416	2.485	0.383	0.458	0.427
	New Mexico	2.712	2.639	2.568	0.385	0.396	0.418
	North Carolina	2.215	2.397	2.433	0.401	0.425	0.433
	North Dakota	2.882	2.846	2.953	0.371	0.362	0.371
	Ohio	3.102	2.959	2.935	0.365	0.362	0.373
	Oregon	2.634	2.873	2.669	0.574	0.458	0.407
	Pennsylvania	2.594	2.887	2.922	0.466	0.360	0.376
	Texas	2.452	2.457	2.608	0.414	0.367	0.412
	Washington	2.741	2.699	2.613	0.448	0.426	0.413
	West Virginia	3.283	2.965	2.860	0.260	0.364	0.385
	Wisconsin	2.972	2.815	2.804	0.448	0.405	0.390
	Average	**2.678**	**2.669**	**2.664**	**0.412**	**0.403**	**0.406**
Appointed, with Voter Retention	Alaska	3.199	2.661	2.859	0.493	0.549	0.545
	Arizona	2.758	2.823	2.851	0.496	0.491	0.546
	California	2.589	2.757	2.856	0.564	0.514	0.545
	Colorado	2.791	2.788	2.860	0.618	0.552	0.545
	Florida	2.960	2.904	2.860	0.601	0.556	0.545
	Indiana	2.667	2.817	2.860	0.459	0.519	0.545
	Iowa	3.094	2.749	2.854	0.511	0.552	0.546
	Kansas	2.793	2.790	2.852	0.445	0.521	0.546
	Maryland	3.063	3.070	2.864	0.654	0.635	0.544
	Missouri	2.654	2.740	2.862	0.507	0.497	0.545
	Nebraska	2.893	2.776	2.861	0.471	0.505	0.545
	Oklahoma	2.301	2.694	2.857	0.690	0.565	0.545
	South Dakota	2.953	2.769	2.852	0.439	0.486	0.546
	Tennessee	2.819	2.946	2.856	0.622	0.557	0.545
	Utah	2.572	2.636	2.852	0.521	0.515	0.546
	Wyoming	2.680	2.705	2.853	0.518	0.506	0.546
	Average	**2.799**	**2.789**	**2.857**	**0.538**	**0.533**	**0.545**
Appointed, with Reappointment	Connecticut	3.510	3.538	3.365	0.431	0.396	0.357
	Delaware	3.168	3.367	3.330	0.403	0.309	0.325
	Hawaii	3.688	3.723	3.463	0.410	0.419	0.375
	Maine	3.395	3.444	3.350	0.373	0.359	0.342
	New York	3.623	3.566	3.380	0.394	0.389	0.367
	South Carolina	3.493	3.555	3.300	0.493	0.434	0.332
	Vermont	3.842	3.590	3.443	0.363	0.438	0.371
	Virginia	3.247	3.199	3.287	0.362	0.324	0.323
	Average	**3.496**	**3.498**	**3.365**	**0.404**	**0.383**	**0.349**
Appointed, for Life	Massachusetts	3.559	3.512	3.509	0.333	0.387	0.359
	New Hampshire	3.130	3.167	3.402	0.384	0.364	0.409
	New Jersey	3.305	3.332	3.421	0.421	0.340	0.322
	Rhode Island	4.015	3.661	3.488	0.329	0.411	0.365
	Average	**3.502**	**3.418**	**3.455**	**0.367**	**0.375**	**0.364**

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Table 5: Probability of Mistakes: Majority Rule and Unanimity Rule

Institution	State	Court Size	Simple Majority (actual)			Unanimity (Expressive)			Unanimity (Strategic)		
			Pr. Incorrect for Plaintiff	Pr. Incorrect for Defendant	β_j^{SM}	Pr. Incorrect for Plaintiff	Pr. Incorrect for Defendant	$\beta_j^{j,exp}$	Pr. Incorrect for Plaintiff	Pr. Incorrect for Defendant	$\beta_j^{j,st}$
Elected	Alabama	9	0.004	0.002	0.003	0.000	0.706	0.367	0.027	0.029	0.028
	Arkansas	7	0.029	0.000	0.010	0.000	0.225	0.147	0.379	0.000	0.131
	Georgia	7	0.072	0.000	0.025	0.000	0.292	0.191	0.521	0.001	0.181
	Idaho	5	0.039	0.001	0.014	0.000	0.195	0.126	0.169	0.003	0.061
	Illinois	7	0.003	0.001	0.001	0.000	0.425	0.266	0.023	0.007	0.013
	Kentucky	7	0.062	0.000	0.021	0.000	0.361	0.237	0.404	0.002	0.139
	Louisiana	7	0.001	0.004	0.002	0.000	0.564	0.219	0.007	0.031	0.016
	Michigan	7	0.000	0.001	0.000	0.000	0.433	0.154	0.002	0.016	0.007
	Minnesota	7	0.021	0.000	0.009	0.000	0.268	0.160	0.234	0.001	0.095
	Mississippi	9	0.029	0.000	0.009	0.000	0.336	0.228	0.615	0.000	0.198
	Montana	7	0.014	0.000	0.005	0.000	0.229	0.142	0.205	0.001	0.079
	Nevada	5	0.045	0.000	0.015	0.000	0.174	0.115	0.193	0.002	0.066
	New Mexico	5	0.023	0.001	0.010	0.000	0.230	0.132	0.091	0.006	0.043
	North Carolina	7	0.153	0.000	0.041	0.000	0.257	0.188	0.807	0.000	0.218
	North Dakota	5	0.020	0.001	0.008	0.000	0.184	0.109	0.089	0.004	0.038
	Ohio	7	0.003	0.000	0.001	0.000	0.208	0.122	0.074	0.001	0.031
	Oregon	7	0.004	0.001	0.002	0.000	0.438	0.280	0.031	0.012	0.019
	Pennsylvania	7	0.029	0.000	0.008	0.000	0.269	0.194	0.308	0.001	0.087
	Texas	9	0.014	0.000	0.005	0.000	0.433	0.264	0.283	0.002	0.111
	Washington	9	0.001	0.000	0.001	0.000	0.476	0.251	0.028	0.005	0.016
	West Virginia	5	0.014	0.000	0.006	0.000	0.085	0.053	0.128	0.001	0.049
	Wisconsin	7	0.000	0.001	0.001	0.000	0.431	0.178	0.004	0.014	0.008
	Average		**0.026**	**0.001**	**0.009**	**0.000**	**0.328**	**0.187**	**0.210**	**0.006**	**0.074**
Appointed, with Voter Retention	Alaska	5	0.003	0.001	0.002	0.000	0.201	0.118	0.016	0.006	0.010
	Arizona	5	0.031	0.001	0.009	0.000	0.185	0.136	0.141	0.003	0.040
	California	7	0.008	0.001	0.003	0.000	0.428	0.286	0.053	0.011	0.025
	Colorado	7	0.000	0.010	0.004	0.000	0.667	0.263	0.000	0.067	0.027
	Florida	7	0.001	0.001	0.001	0.000	0.380	0.237	0.009	0.009	0.009
	Indiana	5	0.038	0.001	0.012	0.000	0.200	0.140	0.158	0.004	0.050
	Iowa	7	0.000	0.001	0.000	0.000	0.390	0.182	0.003	0.012	0.007
	Kansas	7	0.006	0.000	0.003	0.000	0.311	0.189	0.071	0.003	0.030
	Maryland	7	0.000	0.001	0.001	0.000	0.462	0.258	0.001	0.018	0.011
	Missouri	7	0.021	0.000	0.006	0.000	0.265	0.197	0.249	0.001	0.065
	Nebraska	7	0.003	0.000	0.001	0.000	0.320	0.189	0.036	0.005	0.018
	Oklahoma	9	0.010	0.001	0.003	0.000	0.574	0.446	0.112	0.007	0.031
	South Dakota	5	0.011	0.001	0.005	0.000	0.201	0.122	0.050	0.005	0.023
	Tennessee	5	0.003	0.007	0.005	0.000	0.385	0.219	0.008	0.029	0.020
	Utah	5	0.021	0.003	0.009	0.000	0.305	0.196	0.068	0.013	0.033
	Wyoming	5	0.018	0.002	0.008	0.000	0.274	0.178	0.060	0.010	0.027
	Average		**0.011**	**0.002**	**0.004**	**0.000**	**0.347**	**0.210**	**0.065**	**0.013**	**0.026**
Appointed, with Reappointment	Connecticut	7	0.000	0.000	0.000	0.000	0.194	0.104	0.008	0.001	0.004
	Delaware	5	0.015	0.000	0.004	0.000	0.114	0.079	0.093	0.001	0.029
	Hawaii	5	0.001	0.000	0.001	0.000	0.091	0.056	0.015	0.001	0.006
	Maine	7	0.002	0.000	0.001	0.000	0.138	0.089	0.073	0.000	0.026
	New York	7	0.000	0.000	0.000	0.000	0.166	0.087	0.007	0.001	0.004
	South Carolina	5	0.001	0.000	0.001	0.000	0.171	0.091	0.005	0.005	0.005
	Vermont	5	0.001	0.000	0.000	0.000	0.073	0.043	0.014	0.001	0.006
	Virginia	7	0.004	0.000	0.001	0.000	0.149	0.100	0.128	0.010	0.042
	Average		**0.003**	**0.000**	**0.001**	**0.000**	**0.137**	**0.081**	**0.043**	**0.001**	**0.015**
Appointed, for Life	Massachusetts	7	0.001	0.000	0.000	0.000	0.123	0.074	0.046	0.001	0.018
	New Hampshire	5	0.012	0.000	0.004	0.000	0.135	0.086	0.073	0.002	0.028
	New Jersey	7	0.000	0.000	0.000	0.000	0.283	0.125	0.004	0.004	0.004
	Rhode Island	5	0.001	0.000	0.000	0.000	0.058	0.033	0.011	0.000	0.005
	Average		**0.003**	**0.000**	**0.001**	**0.000**	**0.150**	**0.080**	**0.034**	**0.002**	**0.014**

Table 6: "Second-Stage" Estimates and Standard Errors for there sample courts: California, Connecticut and Texas (case-specific covariates fixed at state sample average; individual justices evaluated at their own justice-specific covariates)

	Justice	γ_{it0}	γ_{it1}	θ	s^*	$\pi^{\exp}$	π^{ST}
California (ρ =0.67)	Baxter, Marvin R.	0.154 (0.022)	0.931 (0.014)	2.502 (0.133)	0.408 (0.028)	0.531 (0.042)	0.209 (0.110)
	Chin, Ming W.	0.155 (0.022)	0.943 (0.012)	2.597 (0.127)	0.392 (0.028)	0.493 (0.049)	0.198 (0.106)
	George, Ronald M.	0.131 (0.019)	0.935 (0.013)	2.632 (0.132)	0.426 (0.026)	0.548 (0.039)	0.212 (0.110)
	Kennard, Joyce L.	0.150 (0.022)	0.928 (0.014)	2.495 (0.137)	0.415 (0.028)	0.544 (0.040)	0.213 (0.111)
	Mosk, Stanley	0.037 (0.012)	0.847 (0.035)	2.812 (0.238)	0.636 (0.033)	0.856 (0.059)	0.374 (0.130)
	Werdegar, Kathryn M.	0.152 (0.021)	0.937 (0.013)	2.557 (0.127)	0.403 (0.027)	0.516 (0.044)	0.205 (0.108)
	Brown, Janice Rogers	0.177 (0.024)	0.940 (0.012)	2.485 (0.127)	0.373 (0.030)	0.480 (0.051)	0.198 (0.107)
Connecticut (ρ = 0.54)	Berdon, Robert I.	0.034 (0.024)	0.970 (0.017)	3.700 (0.523)	0.492 (0.031)	0.510 (0.049)	0.145 (0.219)
	Borden, David M.	0.029 (0.021)	0.976 (0.014)	3.875 (0.522)	0.491 (0.028)	0.502 (0.051)	0.146 (0.220)
	Callahan, Robert J.	0.041 (0.029)	0.969 (0.018)	3.614 (0.542)	0.482 (0.031)	0.478 (0.061)	0.136 (0.216)
	Katz, Joette	0.089 (0.059)	0.971 (0.017)	3.246 (0.579)	0.415 (0.048)	0.321 (0.197)	0.112 (0.205)
	Norcott Jr., Flemming L.	0.069 (0.047)	0.974 (0.015)	3.423 (0.563)	0.433 (0.042)	0.344 (0.174)	0.112 (0.202)
	Peters, Ellen Ash	0.061 (0.042)	0.956 (0.025)	3.257 (0.576)	0.475 (0.037)	0.471 (0.069)	0.131 (0.217)
	Palmer, Richard N.	0.059 (0.041)	0.971 (0.017)	3.457 (0.559)	0.451 (0.037)	0.392 (0.133)	0.119 (0.207)
Texas (ρ = 0.61)	Baird, Charles F.	0.171 (0.025)	0.940 (0.011)	2.505 (0.153)	0.380 (0.024)	0.424 (0.053)	0.016 (0.019)
	Clinton, Sam Houston	0.187 (0.032)	0.921 (0.014)	2.299 (0.179)	0.387 (0.030)	0.462 (0.047)	0.017 (0.020)
	Keller, Sharon	0.208 (0.028)	0.947 (0.009)	2.435 (0.146)	0.334 (0.026)	0.369 (0.062)	0.015 (0.019)
	Maloney, Frank	0.176 (0.025)	0.942 (0.010)	2.500 (0.151)	0.373 (0.024)	0.414 (0.055)	0.016 (0.019)
	Mansfield, Steve	0.208 (0.028)	0.949 (0.009)	2.449 (0.145)	0.333 (0.026)	0.365 (0.063)	0.014 (0.018)
	McCormick, Michael J.	0.185 (0.031)	0.925 (0.013)	2.333 (0.174)	0.384 (0.028)	0.454 (0.049)	0.017 (0.020)
	Meyers, Lawrence E.	0.191 (0.027)	0.946 (0.010)	2.483 (0.148)	0.353 (0.025)	0.387 (0.060)	0.015 (0.018)
	Overstreet, Morris L.	0.161 (0.024)	0.942 (0.010)	2.561 (0.151)	0.387 (0.023)	0.427 (0.051)	0.016 (0.020)
	White, Bill M.	0.170 (0.027)	0.931 (0.012)	2.440 (0.164)	0.391 (0.025)	0.450 (0.049)	0.017 (0.021)

Table 7: Case-Specific Data

State	Original	Appeal	Plaintiff Person	Plaintiff Business	Def. Person	Def. Business	Formal Opinion	Jud. Review (US Const.)	Jud. Review (St. Const.)	Murder Case	No. Legal Issues	Evidence	Jury Instruction	Death Penalty	No. of Justices	Prop. Votes for Plaintiff	Unanimous for Plaintiff	Unanimous for Defendant	Minimal Winning
Alabama	0.00	1.00	0.73	0.07	0.33	0.13	0.87	0.00	0.00	0.33	1.53	0.40	0.47	0.33	9.00	0.44	0.27	0.33	0.13
Alaska	0.00	1.00	1.00	0.00	0.20	0.00	1.00	0.10	0.00	0.00	1.40	0.40	0.20	0.00	5.00	0.46	0.40	0.50	0.10
Arizona	0.04	0.89	0.88	0.00	0.15	0.00	1.00	0.05	0.11	0.54	4.86	0.70	0.49	0.50	5.00	0.51	0.39	0.40	0.08
Arkansas	0.00	0.94	0.94	0.01	0.06	0.00	0.91	0.03	0.07	0.33	2.03	0.66	0.24	0.06	7.00	0.20	0.13	0.72	0.06
California	0.01	0.90	0.81	0.01	0.19	0.00	0.99	0.04	0.00	0.48	3.47	0.54	0.56	0.02	7.00	0.37	0.19	0.42	0.13
Colorado	0.55	0.34	0.23	0.00	0.75	0.00	0.51	0.05	0.03	0.05	1.22	0.23	0.14	0.05	7.00	0.77	0.70	0.18	0.06
Connecticut	0.00	0.86	0.65	0.00	0.40	0.10	0.95	0.13	0.05	0.33	2.00	0.60	0.33	0.37	5.00	0.50	0.14	0.19	0.10
Delaware	0.00	0.83	0.90	0.10	0.13	0.00	0.97	0.13	0.10	0.50	2.50	0.52	0.57	0.37	5.00	0.27	0.27	0.70	0.00
Florida	0.02	0.82	0.84	0.00	0.16	0.01	0.33	0.01	0.05	0.63	2.18	0.51	0.55	0.59	7.00	0.42	0.28	0.47	0.09
Georgia	0.00	0.96	0.93	0.00	0.08	0.00	0.99	0.02	0.03	0.63	2.28	0.66	0.37	0.07	7.00	0.26	0.21	0.69	0.03
Hawaii	0.01	0.93	0.78	0.01	0.19	0.02	0.99	0.05	0.03	0.23	2.67	0.63	0.30	0.00	5.00	0.44	0.36	0.52	0.03
Idaho	0.00	0.87	0.89	0.01	0.13	0.08	0.96	0.03	0.09	0.14	2.05	0.39	0.35	0.05	5.00	0.22	0.16	0.71	0.06
Illinois	0.00	0.93	0.76	0.00	0.24	0.00	1.00	0.11	0.15	0.57	2.56	0.58	0.44	0.50	7.00	0.35	0.21	0.47	0.10
Indiana	0.00	0.92	0.95	0.00	0.05	0.00	1.00	0.00	0.02	0.69	2.75	0.73	0.54	0.12	5.00	0.25	0.20	0.70	0.02
Iowa	0.00	1.00	0.67	0.00	0.33	0.00	0.67	0.00	0.00	0.00	2.00	0.33	0.33	0.00	7.00	0.33	0.33	0.67	0.00
Kansas	0.00	0.96	0.78	0.01	0.23	0.02	1.00	0.02	0.02	0.47	2.95	0.62	0.54	0.12	7.00	0.42	0.30	0.64	0.02
Kentucky	0.01	0.90	0.87	0.00	0.13	0.00	0.95	0.03	0.05	0.43	2.74	0.69	0.33	0.26	7.00	0.65	0.19	0.32	0.19
Louisiana	0.00	0.99	0.46	0.00	0.55	0.00	0.68	0.05	0.08	0.43	1.90	0.54	0.35	0.00	7.00	0.30	0.48	0.25	0.04
Maine	0.00	0.95	0.91	0.00	0.09	0.00	1.00	0.00	0.01	0.06	1.86	0.66	0.41	0.00	7.00	0.30	0.28	0.70	0.00
Maryland	0.00	0.95	0.78	0.00	0.23	0.00	0.98	0.03	0.04	0.24	1.63	0.49	0.26	0.08	7.00	0.56	0.41	0.28	0.09
Massachussets	0.02	0.93	0.86	0.02	0.17	0.00	0.91	0.00	0.00	0.38	1.86	0.64	0.36	0.00	7.00	0.30	0.24	0.60	0.07
Michigan	0.00	1.00	0.44	0.00	0.56	0.00	0.85	0.01	0.00	0.21	1.33	0.51	0.22	0.00	7.00	0.63	0.24	0.08	0.36
Minnesota	0.00	0.91	0.79	0.01	0.20	0.01	0.97	0.03	0.01	0.54	1.98	0.66	0.31	0.00	7.00	0.32	0.25	0.58	0.08
Mississippi	0.00	0.96	0.98	0.00	0.03	0.00	0.95	0.01	0.03	0.32	2.37	0.62	0.37	0.11	9.00	0.36	0.14	0.38	0.17
Missouri	0.00	0.87	0.92	0.01	0.08	0.01	0.90	0.06	0.19	0.53	4.16	0.58	0.59	0.48	7.00	0.31	0.23	0.60	0.03
Montana	0.00	0.95	0.88	0.00	0.12	0.00	0.99	0.01	0.04	0.04	1.85	0.60	0.15	0.03	7.00	0.32	0.22	0.55	0.15
Nebraska	0.02	0.94	0.81	0.00	0.18	0.00	0.84	0.06	0.05	0.31	1.99	0.51	0.35	0.04	7.00	0.36	0.28	0.57	0.07
Nevada	0.00	0.85	0.93	0.00	0.07	0.00	0.39	0.02	0.01	0.41	2.77	0.65	0.38	0.24	5.00	0.44	0.26	0.39	0.16
New Hampshire	0.01	0.93	0.92	0.01	0.08	0.01	0.97	0.01	0.03	0.07	1.57	0.64	0.28	0.00	5.00	0.27	0.21	0.66	0.07
New Jersey	0.02	0.89	0.46	0.02	0.54	0.00	0.91	0.09	0.06	0.33	1.89	0.46	0.52	0.13	7.00	0.59	0.46	0.26	0.07
New Mexico	0.00	1.00	0.81	0.00	0.19	0.00	1.00	0.06	0.00	0.25	1.75	0.38	0.44	0.00	5.00	0.39	0.19	0.50	0.06
New York	0.00	0.95	0.76	0.04	0.21	0.02	0.91	0.02	0.03	0.23	1.43	0.43	0.14	0.00	7.00	0.38	0.28	0.50	0.04
North Carolina	0.00	1.00	0.94	0.00	0.06	0.00	1.00	0.02	0.02	0.87	4.14	0.83	0.69	0.39	7.00	0.21	0.18	0.75	0.01
North Dakota	0.00	0.98	0.85	0.00	0.16	0.00	1.00	0.01	0.01	0.06	1.72	0.61	0.28	0.00	5.00	0.25	0.21	0.72	0.07
Ohio	0.02	0.92	0.77	0.00	0.27	0.01	0.71	0.03	0.03	0.47	2.81	0.48	0.42	0.40	7.00	0.29	0.17	0.58	0.01
Oklahoma	0.00	0.68	0.97	0.00	0.03	0.00	0.91	0.02	0.02	0.58	2.97	0.66	0.52	0.54	5.03	0.23	0.18	0.66	0.02
Oregon	0.00	0.87	0.87	0.00	0.13	0.00	1.00	0.00	0.00	0.27	1.47	0.67	0.20	0.27	7.00	0.70	0.47	0.07	0.13
Pennsylvania	0.00	0.76	0.90	0.00	0.10	0.00	1.00	0.03	0.03	0.54	2.78	0.63	0.32	0.43	7.00	0.38	0.18	0.46	0.15
Rhode Island	0.00	0.93	0.84	0.00	0.16	0.00	0.47	0.01	0.01	0.11	1.89	0.54	0.26	0.00	5.00	0.31	0.26	0.64	0.02
South Carolina	0.01	0.99	0.72	0.04	0.26	0.02	0.91	0.02	0.01	0.33	1.83	0.45	0.35	0.17	5.00	0.49	0.42	0.42	0.05
South Dakota	0.00	0.95	0.90	0.01	0.13	0.00	0.86	0.02	0.04	0.14	1.88	0.53	0.32	0.01	5.00	0.30	0.22	0.55	0.12
Tennessee	0.00	0.88	0.71	0.00	0.29	0.00	1.00	0.05	0.06	0.33	1.87	0.57	0.30	0.19	5.00	0.41	0.33	0.47	0.10
Texas	0.01	0.85	0.81	0.01	0.19	0.00	0.88	0.06	0.06	0.30	1.80	0.44	0.28	0.21	9.00	0.45	0.16	0.22	0.17
Utah	0.00	0.80	0.83	0.00	0.17	0.00	1.00	0.02	0.00	0.24	2.30	0.50	0.28	0.04	5.00	0.31	0.17	0.50	0.17
Vermont	0.00	0.95	0.90	0.00	0.11	0.00	0.66	0.05	0.02	0.13	1.76	0.52	0.34	0.00	5.00	0.29	0.19	0.62	0.06
Virginia	0.00	0.95	0.86	0.00	0.14	0.00	0.98	0.19	0.19	0.36	2.86	0.57	0.34	0.31	7.00	0.35	0.31	0.57	0.03
Washington	0.01	0.99	0.73	0.01	0.28	0.03	0.93	0.04	0.01	0.13	1.57	0.57	0.33	0.01	9.00	0.51	0.31	0.28	0.12
West Virginia	0.04	0.91	0.94	0.01	0.09	0.07	0.45	0.05	0.04	0.31	1.76	0.55	0.36	0.00	5.00	0.35	0.28	0.55	0.03
Wisconsin	0.00	1.00	0.54	0.00	0.49	0.00	0.98	0.07	0.05	0.02	1.39	0.44	0.22	0.00	7.00	0.57	0.37	0.24	0.24
Wyoming	0.00	0.99	0.93	0.04	0.07	0.07	1.00	0.03	0.04	0.07	2.14	0.55	0.30	0.00	5.00	0.15	0.11	0.81	0.04
Obs	5958	5958	5947	5947	5921	5921	5938	5925	5929	5958	5958	5958	5958	5958	5958	5958	5958	5958	5958
Mean	0.01	0.91	0.83	0.01	0.17	0.01	0.87	0.03	0.04	0.37	2.31	0.58	0.38	0.17	6.56	0.36	0.25	0.52	0.08
Std.Dev.	0.12	0.29	0.37	0.08	0.38	0.10	0.33	0.17	0.20	0.48	2.11	0.49	0.48	0.37	1.28	0.36	0.43	0.50	0.27
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	28.00	1.00	1.00	1.00	9.00	1.00	1.00	1.00	1.00

Table 8: Justice-Specific Data

Justices in Largest Natural Courts (LNC) in Each State. Average Values of Justice-Specific Covariates, per State (324 Justices)

State	Elected	Apptd for life	Appt. w/ Pol. Reappointment	Prior Judicial Experience	Prior Political Experience	Years of Experience	PAJID at appointment	CIT at decision	GOV at decision
Alabama	1.00	0.00	0.00	5.13	0.00	12.15	33.59	41.37	45.13
Alaska	0.00	0.00	0.00	2.40	0.00	15.34	41.77	22.34	33.87
Arizona	0.00	0.00	0.00	9.20	0.00	5.71	25.32	40.26	1.64
Arkansas	1.00	0.00	0.00	5.00	0.14	5.36	39.23	47.00	46.83
California	0.00	0.00	0.00	5.43	0.14	8.80	29.22	55.65	44.08
Colorado	0.00	0.00	0.00	3.83	0.14	10.63	42.56	42.48	55.92
Connecticut	0.00	0.00	1.00	10.29	0.14	7.29	57.87	58.98	42.62
Delaware	0.00	0.00	1.00	8.40	0.00	6.41	42.79	43.79	53.75
Florida	0.00	0.00	0.00	8.71	0.00	9.68	49.50	44.60	55.27
Georgia	1.00	0.00	0.00	11.83	0.00	2.92	45.49	41.77	85.34
Hawaii	0.00	0.00	1.00	7.20	0.00	4.44	82.22	79.81	93.88
Idaho	1.00	0.00	0.00	7.60	0.20	4.73	30.74	20.35	2.38
Illinois	1.00	0.00	0.00	13.83	0.14	13.84	44.93	59.93	36.68
Indiana	0.00	0.00	0.00	1.00	0.00	6.22	50.25	40.30	51.84
Iowa	0.00	0.00	0.00	9.86	0.14	13.93	25.27	40.77	20.92
Kansas	0.00	0.00	0.00	9.83	0.14	9.18	21.20	36.08	6.08
Kentucky	1.00	0.00	0.00	9.29	0.14	7.71	37.83	36.46	73.96
Louisiana	1.00	0.00	0.00	9.00	0.14	10.82	29.80	35.13	39.58
Maine	0.00	0.00	1.00	6.29	0.00	7.34	61.16	52.20	48.38
Maryland	0.00	0.00	0.00	9.00	0.14	11.42	78.04	58.37	90.17
Massachusetts	0.00	1.00	0.00	5.86	0.00	11.24	55.51	86.47	79.78
Michigan	1.00	0.00	0.00	7.43	0.14	11.54	47.79	48.45	15.77
Minnesota	1.00	0.00	0.00	2.50	0.14	5.06	46.35	49.55	40.83
Mississippi	1.00	0.00	0.00	6.33	0.33	7.74	30.75	23.78	27.88
Missouri	0.00	0.00	0.00	3.29	0.14	6.54	24.97	46.33	70.91
Montana	1.00	0.00	0.00	0.86	0.14	6.83	32.68	41.62	7.50
Nebraska	0.00	0.00	0.00	2.71	0.00	6.76	38.82	32.68	53.00
Nevada	1.00	0.00	0.00	3.00	0.60	9.56	27.14	39.51	50.91
New Hampshire	0.00	1.00	0.00	5.00	0.25	10.09	4.23	38.55	43.80
New Jersey	0.00	0.71	0.29	5.00	0.14	12.67	39.06	61.72	23.43
New Mexico	1.00	0.00	0.00	8.00	0.00	5.18	45.09	44.83	49.75
New York	0.00	0.00	1.00	13.14	0.00	7.45	56.16	64.28	43.68
North Carolina	1.00	0.00	0.00	6.29	0.14	8.38	35.00	42.29	60.33
North Dakota	1.00	0.00	0.00	2.60	0.20	8.29	32.83	51.87	18.53
Ohio	1.00	0.00	0.00	7.71	0.14	6.58	36.99	48.07	15.00
Oklahoma	0.00	0.00	0.00	6.44	0.00	17.08	39.01	9.25	10.54
Oregon	1.00	0.00	0.00	8.71	0.29	6.91	60.50	56.54	55.79
Pennsylvania	1.00	0.00	0.00	4.86	0.00	7.86	43.74	56.29	28.23
Rhode Island	0.00	1.00	0.00	12.25	0.40	6.01	41.10	77.11	71.08
South Carolina	0.00	0.00	1.00	11.40	1.00	5.92	35.00	41.37	24.45
South Dakota	0.00	0.00	0.00	7.20	0.00	6.39	23.66	42.13	9.00
Tennessee	0.00	0.00	0.00	6.80	0.20	6.13	48.20	32.02	24.18
Texas	1.00	0.00	0.00	0.89	0.00	6.96	34.14	34.80	31.33
Utah	0.00	0.00	0.00	3.20	0.00	12.50	28.66	36.77	5.30
Vermont	0.00	0.00	1.00	6.80	0.20	9.46	66.85	75.46	83.99
Virginia	0.00	0.00	1.00	8.43	0.00	12.81	34.56	36.51	25.51
Washington	1.00	0.00	0.00	6.88	0.11	7.19	52.57	50.96	53.79
West Virginia	1.00	0.00	0.00	8.20	0.20	2.60	38.23	70.14	54.62
Wisconsin	1.00	0.00	0.00	9.71	0.29	9.57	30.55	52.42	35.50
Wyoming	0.00	0.00	0.00	4.40	0.00	9.58	29.45	31.20	4.17
Average in LNCs	0.47	0.07	0.15	6.77	0.13	8.66	40.72	46.02	41.08

Full Sample

	Elected	Apptd for life	Appt. w/ Pol. Reappointment	Prior Judicial Experience	Prior Political Experience	Years of Experience	PAJID at appointment	CIT at decision	GOV at decision
Obs.	520	520	520	507	507	510	453	520	520
Mean	0.49	0.06	0.16	6.87	0.15	5.50	39.49	45.85	41.02
Std.Dev.	0.50	0.24	0.36	7.06	0.36	7.34	22.59	14.97	22.88
Min.	0.00	0.00	0.00	0.00	0.00	0.00	1.25	9.25	1.64
Max.	1.00	1.00	1.00	35.00	1.00	62.70	96.62	86.47	93.88