

# **Turnover and Accountability of Appointed and Elected Judges**

Claire S.H. Lim \*  
University of Pennsylvania

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\*Department of Economics, University of Pennsylvania, PA 19104-6297. E-mail: shlim@econ.upenn.edu. I am deeply indebted to Antonio Merlo for his guidance and encouragement. I am also grateful to Kenneth Wolpin and Robert Inman for helpful suggestions. I thank the Kansas Sentencing Commission for providing the sentencing data, and I also thank seminar participants at Brown, Caltech, Concordia, Duke, Penn, and Stanford GSB for their comments. Financial support from National Science Foundation grant SES-0649237 and from Penn Institute for Economic Research is gratefully acknowledged.

## Abstract

Each year, more than 90 percent of civil and felony crime cases in the United States are handled by state court judges. This paper investigates two different systems that are used to select and retain these judges. Under one system, when there is an open seat on the bench, the governor appoints a new judge; when the term of the judge expires, he faces an up-or-down (i.e., yes-or-no) majority decision by voters, without facing a challenger. Under the other system, judges are selected and re-elected through competitive elections.

This study focuses on the relationship between reelection rates and the behavior of the judges under the two systems. National statistics show that the reelection failure rate of appointed judges is substantially lower than that of elected judges. Specifically, we address the following questions: (i) How are reelection outcomes under the two systems related to judges' court decisions? (ii) To what extent do other factors (e.g., party affiliation) affect reelection outcomes? (iii) Are there any differences between the types of judges selected under the two systems? To answer these questions, we specify and estimate a dynamic model of judges' behavior using individual-level data on judges' criminal sentencing and electoral outcomes from the state of Kansas, where both systems are used to select and retain the state district court judges.

Our findings are as follows. First, the sentencing behavior of elected judges is an important determinant of their reelection. However, the extent and the direction of the effect are substantially different depending on the political orientation of their constituency. In contrast, when the judges are appointed, their sentencing behavior has no effect on their reelection. Second, party affiliation and political climate during an election significantly affect the reelection probability of the elected judges. On the other hand, the effect of these variables on the appointed judges' reelection is negligible. Lastly, our estimates suggest that appointed judges are more homogeneous than elected judges in terms of their sentencing preferences.

**Keywords** : Appointment, Election, Turnover, Accountability, Judges, Sentencing

**JEL classification** : D72, D78, H79, K0

# 1 Introduction

Understanding systems concerning the selection and retention of public officials and their effects on policy outcomes has long been a key issue in political economy. In this paper, we study the systems for selecting and retaining state court judges in the United States. State courts play a major role in the American judicial system. In 2004, compared with federal courts, state courts had 12 times more civil case filings and 47 times more criminal case filings. (See National Center for State Courts (2005) and U.S. Courts (2004) for details.)

In this study, we compare two different systems which are prevalent in the United States. Under one system (**‘appointment and up-or-down vote’**), when there is an open seat on the bench, the governor appoints a new judge; when the term of the judge expires, he has to face an up-or-down (i.e., yes-or-no) majority decision by the voters, without facing a challenger. If an incumbent judge fails to gain the support of the majority of voters, his seat becomes vacant, and the governor appoints a new judge. Under the other system (**‘competitive election’**), judges are selected and re-elected through competitive elections.<sup>1</sup>

In this study, we focus on judges’ reelection rates and their relationship with judges’ behavior under the two systems. National statistics show that the reelection failure rate of appointed judges (through the up-or-down vote) is substantially lower than that of elected judges (through competitive elections), as documented in Table 1<sup>2</sup>.

Table 1: Rate of Incumbent Failure

(State Supreme Courts, 1980-1995)

Appointment and Up-or-down Vote	Competitive Election
1.7%	13.4 %

This difference raises three questions that are crucial to understanding these systems: (i) How are the reelection outcomes under the two systems related to judges’ decisions in the court ? (ii) To what extent do reelection outcomes depend on other factors such as judges’ age and tenure or voters’ party preference ? (iii) Are there any differences in

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<sup>1</sup>In the United States, sixteen states currently use appointment and up-or-down vote, and nineteen states use competitive elections. There are also states that use different types of systems such as appointment-and-reappointment or appointment-with-life-tenure.

<sup>2</sup>See Hall (2001) for details.

the preferences of judges selected under the two systems ? The goal of this study is to answer these three questions. To achieve this goal, we specify and estimate a dynamic model of judges' behavior, using a newly collected data set that combines *rich individual-level data* on judges' criminal sentencing decisions with *detailed information on judges' electoral outcomes, individual characteristics and career profiles* in the State of Kansas, where both systems are used to select and retain state district court judges.

Several interesting patterns emerge from the data. Elected judges' sentencing decisions show substantial variation across judicial districts, and are correlated with the political orientation of the districts. Specifically, judges who are elected in conservative (liberal) districts tend to be relatively "harsh" ("lenient") in their sentencing. In contrast, the sentencing behavior of appointed judges is remarkably more homogeneous, characterized by preponderance of "average" decisions, regardless of the political orientation of their districts.<sup>3</sup> The two key innovative features of this study are : (i) to establish the quantitative relationship between the sentencing behavior, judges' characteristics and the probability of reelection; and (ii) to estimate the preference distribution of judges selected under the two systems.

Addressing these issues is important for several reasons. First, the quantitative relationship between judges' decisions in the court and reelection probability is directly related to the accountability of judges. In cases where reelection probability of judges is mostly explained by other factors such as fluctuations in voters' party preference or judges' age, it would suggest that voters do not care or do not have much information about judges' decisions. In such a situation, judges would not have an incentive to change their court decisions in response to electoral pressure. On the other hand, if reelection outcomes are substantially affected by judges' decisions, judges have strong incentives to change their court decisions to please voters. Thus, understanding the quantitative relationship between reelection outcomes, judges' court decisions, and other factors is essential to understanding the effect of reelection concerns on judges' behavior under the two systems.

Second, estimating the preference of judges under the two systems is important because the two systems are different in initial selection processes as well as reelection processes. If the two initial selection processes yield different types of judges, it would generate different patterns of judges' court decisions under the two systems. Even in the case that the up-or-down vote and the competitive election impose the same degree of accountability on judges' behavior, if the types of judges differ substantially from those

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<sup>3</sup>Details are described in Section 1.1.2 and Section 3.

of elected judges, then we may observe a substantial difference in their behavior and in reelection failure rates.

In the model we develop in this paper, a judge makes: (i) criminal sentencing decisions, considering both their effect on his reelection probability and his own preference over sentencing, and (ii) exit decisions from the bench, considering the payoff from his outside options, the payoff from the seat on the bench, and his reelection prospects. We estimate the model using simulated maximum likelihood, with data for 243 state district court judges who entered the court since 1976.

Our dynamic framework enables us to address two main issues that arise in analyzing the relationship between judges' decisions and reelection probability. The first issue is endogeneity of their sentencing decisions. When judges make sentencing decisions, they anticipate that their decisions may affect the likelihood of reelection. In modeling judges' sentencing decisions, we incorporate details of judges' career history into their out-of-bench payoff. Judges' detailed career history is the information that is costly for voters to acquire, hence it is unlikely to affect reelection probability. However, judges with different career histories have different potential out-of-bench payoffs, which in turn generates variation in judges' stake in reelection. That is, it generates variation in each judge's incentives to appeal to voters with their court decisions. This innovative feature, which is based on our new data on judges' career history, addresses the endogeneity of sentencing decisions. Thus, we can consistently estimate the relationship between judges' reelection probability and their sentencing decisions. Second, by explicitly incorporating judges' exit decisions in our model, we address the potential selection bias in reelection probability that can be caused by judges' endogenous choice to run for reelection<sup>4</sup>.

Our main findings are as follows. First, the sentencing behavior of elected judges is an important determinant of their reelection. However, the extent and the direction of the effect differ substantially depending on the political orientation of their constituencies. When an elected judge is in a conservative district, lenient sentencing decisions are severely punished by the voters, substantially reducing the chances of reelection. In contrast, when an elected judge is in a liberal district, lenient decisions are preferred, and the effect of sentencing decisions on reelection is smaller than in conservative districts. On the other hand, when judges are appointed, their sentencing behavior has no effect on their reelection at the up-or-down stage.

Second, the party affiliation and the political climate during an election significantly

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<sup>4</sup>In this regard, we follow the approach in Diermeier et al. (2005).

affect the reelection probability of the elected judges. The effects are asymmetric across the parties and the political climates, with Republican judges being considerably more vulnerable to fluctuations in political climate. In contrast, appointed judges are unaffected by fluctuations in political climate even when the governor's party affiliation differs from that of the judges.

Lastly, our estimates suggest that the appointed judges are more homogeneous than the elected judges with respect to their preferences over sentencing decisions. The distribution of appointed judges' preference is highly concentrated around the standard (i.e., middle) preference, while that of elected judges shows substantial dispersion, with preferences for harsh, standard, and lenient sentencing being almost equally likely.

Using the estimated model, we conduct two counterfactual experiments. In the first experiment, we consider a scenario where both the appointed and elected judges are life-tenured. The result of our experiment shows that removing the reelection processes would considerably decrease the frequency of elected judges' lenient decisions in liberal districts, and increase their frequency in conservative districts. However, even after removing the reelection processes, the distribution of the elected judges' sentencing decisions is very different from that of the appointed judges, because of the difference in their underlying sentencing preferences. In the second experiment, we switch the reelection processes under the two systems. That is, we consider a scenario where appointed judges run for competitive reelections and elected judges run for up-or-down votes. We find that when appointed judges have to run for competitive reelection, they change their sentencing behavior to conform to the preference of the voters in their districts, generating disparity between conservative and liberal districts in sentencing patterns. However, the degree of disparity across districts is smaller than that generated by the behavior of elected judges running for competitive reelection, because of appointed judges' homogeneity in their sentencing preferences. When elected judges face an up-or-down vote reelection process, the result is similar to the case where judges are life-tenured.

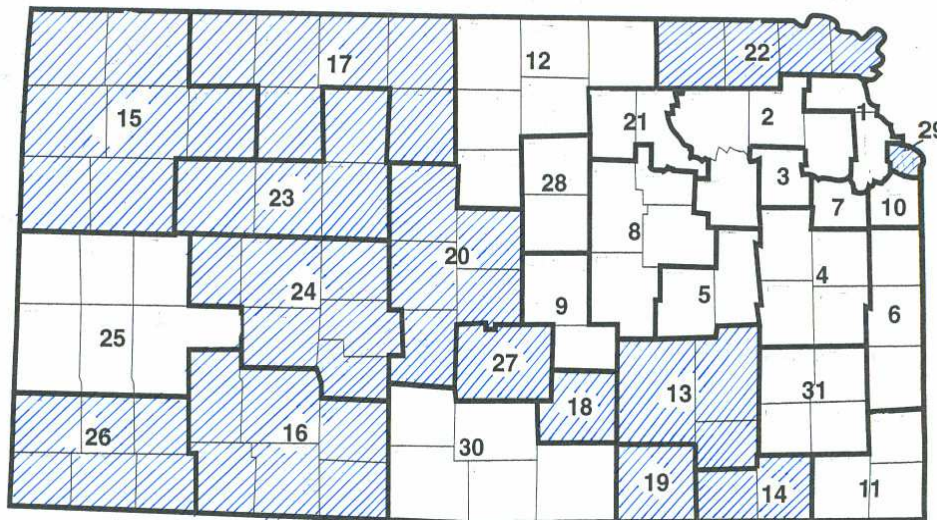
## **1.1 Institutional Background and Data Preview**

In the following section, we provide an overview of the institutional background of the State of Kansas, and we show the main features of key variables in Kansas. Remaining details of our data are described in Section 3.

### 1.1.1 Institutional Background

There are 160 state district court judgeships in 31 judicial districts in the State of Kansas. Figure 1 shows the geographical distribution of the two systems. Among thirty-one judicial districts, seventeen districts (unshaded region in Figure 1) use the system of appointment and up-or-down vote, and these districts constitute 87 judgeships. On the other hand, in fourteen districts (shaded region in Figure 1), judges are elected, and these districts constitute 73 judgeships.

Figure 1: Geographical Distribution of the Two Systems in Kansas



The two systems have similar distribution of judicial districts in terms of social and political characteristics. First, when we classify judicial districts that have populations larger than 50,000 per county as metropolitan districts, 6 out of 31 judicial districts are metropolitan districts<sup>5</sup>. Among these six judicial districts, three districts (Districts 3, 7 and 10) have appointed judges, and the other three districts (Districts 18, 27, and 29) have elected judges. Second, when we classify judicial districts based on political orientation, out of eleven districts that are relatively liberal, six districts have appointed judges and five districts have elected judges<sup>6</sup>.

<sup>5</sup>The judicial districts that are classified as metropolitan districts are as follows: Districts 3 (Shawnee County which contains the capital city Topeka), 7 (Douglas County), 10 (Johnson County), 18 (Sedgwick County, which contains City of Wichita), 27 (Reno County), and 29 (Wyandotte County, which contains Kansas City).

<sup>6</sup>Eleven judicial districts that are classified as liberal districts are Districts 1, 3, 5, 6, 7, 11, 18, 19, 23, 27, and 29. The classification of political orientation is based on the normalized vote share of Democratic candidates (i.e., Democratic vote share / (Democratic + Republican vote share)) in gubernatorial and presidential elections from 1950 to 2006. Specifically, in the liberal districts, the average normalized vote share

Table 2: Characteristics of the Districts under the Two systems in Kansas

	Appointed	Elected
no. of districts	17	14
no. of judges	87	73
no. of metropolitan districts	3	3
no. of liberal districts	6	5

Under both systems, the term of each district judge is 4 years. As for electoral cycle, fifty-nine percent of the seats are up for election in the same year as the presidential election (‘presidential cycle’), and the rest of the seats are up for election in the year of the gubernatorial election (‘gubernatorial cycle’), which is staggered with the presidential election.

One of the main tasks that district court judges perform is criminal sentencing<sup>7</sup>, which is guided by the Kansas Criminal Sentencing Guidelines. Under the guidelines, criminal cases are categorized based on the defendant’s criminal history and the severity of offenses. The guidelines specify the maximum, standard, and minimum jail time for each category of case characteristics. Once a defendant is convicted, judges have discretion over jail time, which can vary from the specified minimum to maximum jail time. The table of the maximum, standard, and minimum jail time in the sentencing guideline is contained in Section A in the appendix.

### 1.1.2 Patterns of Sentencing Decisions in Kansas

In Figure 2, we summarize overall patterns of sentencing decisions under the two systems, when judges are in conservative and liberal districts. Specifically, the figure shows the relative frequency (%) of five different actions ( $H$ ,  $SH$ ,  $S$ ,  $SL$ ,  $L$ ) in sentencing decisions from the harshest decision ( $H$ , the left-most bar in each graph) to the most lenient

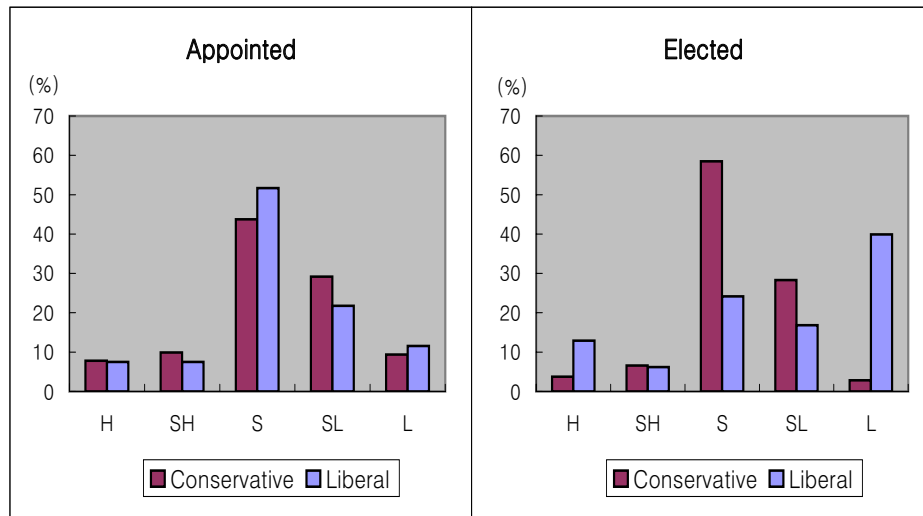
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of Democratic candidates is larger than 49% in gubernatorial elections and larger than 38% in presidential elections. (Since Kansas is favorable to the Republican party in national politics, there is a discrepancy between the criteria of vote share from the gubernatorial election (state politics) and the presidential election (national politics), but the two criteria yield identical classification results.)

<sup>7</sup>Among the 45.4 million non-traffic cases entering state courts in 2004, nearly half (20.7 million) were criminal cases. See National Center for State Courts (2004). It has also been well documented that criminal sentencing is regarded as one of the most important issue areas in the judicial elections. For details, see Goldberg et al. (2002).



Figure 2: Distribution of Sentencing Decisions



decision (*L*, the right-most bar in each graph)<sup>8</sup>. When judges are appointed, sentencing decisions show negligible difference across the political orientations of judicial districts. In contrast, elected judges’ sentencing behavior differs remarkably depending on whether they represent conservative or liberal districts<sup>9</sup>. In particular, there is a substantial difference in the relative frequency of the most lenient sentencing decision (*L*). While elected judges in conservative districts make the most lenient decision only 2.8% of the time, elected judges in liberal districts make the most lenient decision 39.9% of the time.

The remarkable difference in sentencing patterns of judges across districts under the two systems indicates that there is a substantial difference in the way that the two systems function. However, the sentencing pattern by itself does not yield a clear conclusion on whether different reelection concerns under the two systems yield different results or whether different types of judges enter the court under the two systems. One of the major goals of this study is to better understand this issue.

### 1.1.3 Patterns of Reelection in Kansas

Figure 3 shows the defeat rates of elected and appointed judges in Kansas. The defeat rate

<sup>8</sup>The five decisions *H*, *SH*, *S*, *SL*, *L* mean ‘harsh’, ‘standard-harsh’, ‘standard’, ‘standard-lenient’, and ‘lenient’, respectively. Aggregation of raw sentencing decisions into five different actions is based on sentenced jail time. The specific way that the five actions *H*, *SH*, *S*, *SL*, *L* are constructed is described in Section 3.3.

<sup>9</sup>The difference in elected judges’ behavior across districts is statistically significant at the 1% level under  $\chi^2$ -test.

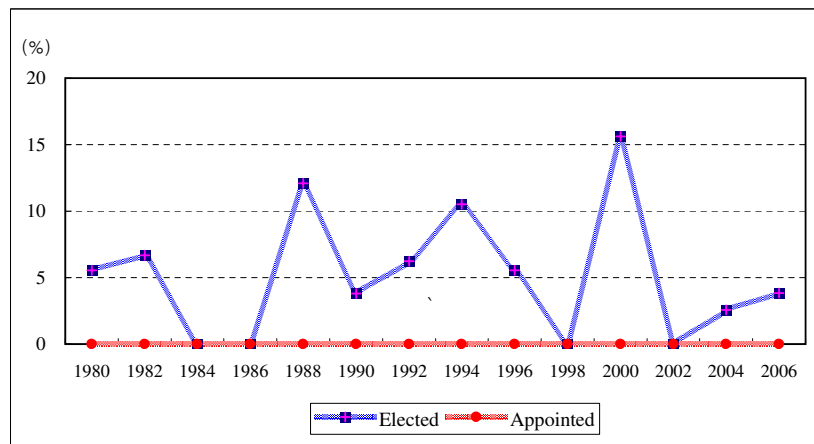


Figure 3: Defeat Rates of Appointed and Elected Judges in Kansas

of elected judges (the upper graph in Figure 3) shows high fluctuation across time. While there are election years in which no defeats occur, 15.6 percent of elected incumbent judges who chose to run failed in the 2000 elections. Appointed judges (the lower graph in Figure 3) show a very different pattern of reelection. For appointed judges, there was no reelection failure throughout the period<sup>10</sup>. The overall patterns in Figure 3 show that the functioning of the reelection processes is very different under the two systems in the state of Kansas, as can be seen in the national statistics shown in Table 1.

## 1.2 Related Literature

This study contributes to the growing political economy literature of comparing the behavior of non-elected and elected public officials. Recent studies by Alesina and Tabellini (2007a, 2007b) analyze theoretically what types of policy tasks are better performed by bureaucrats as opposed to politicians. Additionally, Maskin and Tirole (2004) focus on characterizing the advantages and drawbacks of holding public officials accountable through elections. Canes-Wrone and Shotts (2007) also show that reelection motives may keep politicians from using private information about policy, and analyze how such an effect varies depending on voters' information about policy and politicians' preferences.

On the other hand, a study by Besley and Coate (2003) focuses on comparing appoint-

<sup>10</sup>The lack of variation in the binary outcomes of the reelection of appointed judges prevents using that variation to estimate the reelection probability function. In our analysis, we use the variation of the vote share as the source of identification for the reelection probability of appointed judges. The exact specification of the relationship between vote share distribution and reelection probability is described in Section 2.2.

ment and election as selection procedures. Specifically, they show that selecting regulators through election as opposed to appointment leads to issue-unbundling and leads to selecting the types of regulators who will conform to voters' preferences.

There has also been a long tradition of economic research analyzing judges' political roles or career motives, from the seminal papers by Landes and Posner (1975) and Posner (1993) to the recent theoretical study by Levy (2005)<sup>11</sup>. The research in this tradition has typically been focused on one of the three following dimensions : (a) modeling strategic aspects of the interaction between the judicial branch and other branches of government (e.g., Landes and Posner (1975), Spiller and Gely (1990, 1992)), (b) assessing the effect of judges' background on their decisions (e.g., Ashenfelter et al. (1995)) and (c) understanding judges' career concerns (e.g., Posner (1993), Levy (2005)). One of the major innovations of our research is to specify a unified empirical framework in which judges' decisions interact with their long-term career concerns, political environments and judges' backgrounds. By incorporating all three factors together in one framework and connecting these factors jointly to data, we can assess the relative importance of these factors in judges' decisions.

There is also a sizable literature that analyzes the politico-economic causes and effects of judicial selection mechanisms. Recent research by Hanssen (2004a, 2004b) clarifies how politico-economic instability affects the change of the judicial selection rules. Hanssen finds that political instability may lead states to adopt systems that appoint judges as opposed to systems that elect judges. His finding motivates the question of how different the types of selected judges are under the two systems and how the turnover of judges is determined, both of which are answered in our analysis. Some papers are more directly related to the variables we focus on in our analysis. For instance, Hall (2001) focuses on systematic statistical investigation of judicial elections, specifically the rate of incumbent judges being challenged and defeated, and the average vote share. Her analysis provides a good understanding of the electoral vulnerability of judges under various systems. However, if we focus only on the statistics of reelection outcomes and do not connect them to individual judges' decisions and characteristics, it is not clear what drives the difference in reelection rates under different systems. And, it is necessary to establish the exact quantitative relationship between judges' behavior, characteristics and the reelection outcomes, in order to crystallize our understanding of various reelection procedures in terms

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<sup>11</sup>For other research about judges, also see Daughety and Reinganum (1999,2000), Spitzer and Talley (2000), Iaryczower et al. (2002), Spiller and Bergh (2003), I Vidal and Leaver (2005), Yoon (2006), Boylan (2006), and Spiller and Gely (2007).

of accountability.

There have also been numerous efforts to document the impact of judicial selection mechanisms on judges' behavior. For example, Besley and Payne (2003) investigate the empirical difference in filings of employment discrimination charges under various judicial selection mechanisms. Further, Bohn and Inman (1996) find that states with elected judges are more likely to have a balanced budget. On the other hand, Huber and Gordon (2007) document the difference between appointed and elected judges in Kansas in terms of their criminal sentencing behavior, and find that both the probability of incarceration and the average jail time sentenced are higher when judges are elected<sup>12</sup>. (For research about judges decisions in other areas, see Hall (1992, 1995), Brace and Hall (1997), Brace et al. (1999), Hanssen (1999, 2000), Blume and Eisenberg (1999), Tabarrok and Helland (1999), Romero et al. (2002), and Gelman et al. (2004).)

These studies about judicial selection mechanisms have substantially improved our understanding of the systems. However, they do not estimate the relationship between judges' decisions and reelection probability. If we do not clarify that relationship, it is unclear what causes the difference between appointed and elected judges' decisions. That is, appointed and elected judges' behaviors may differ because they have different reelection concerns, or because they are different types of judges in their preferences, or for both reasons. Such an analysis has not been conducted to date because of the paucity of information on judges' characteristics and career profiles, which may in turn affect their turnover or their decision-making in courts<sup>13</sup>. A major innovation of this study is to address this issue by jointly estimating the preference of judges and reelection probability with our new data on individual judges' reelections, characteristics and career histories.

The rest of the paper is organized in the following order. In the next section, we specify the model. Then, we describe our data in Section 3. In Section 4, we provide the solution given by the model and the likelihood function. In Section 5, we summarize the estimation results. In Section 6, we discuss our counterfactual experiments, and we

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<sup>12</sup>There are three major differences between the analysis in Huber and Gordon (2007) and our analysis. First, we focus on how difference in sentencing patterns across districts are different under the two systems. That is, we focus on the difference-in-differences in judges' decision patterns under the two systems rather than overall differences. Second, we explicitly connect judges' sentencing decisions to reelection probability by adding data on reelections and judges' decisions to run for reelection. Lastly, in our analysis, reelection concerns vary across judges and across time through party affiliation, political climate during elections, and payoffs from outside options. And, the way that these factors affect judges' sentencing decisions is modeled in a dynamic perspective.

<sup>13</sup>The obstacle caused by the paucity of such information has been discussed in other studies about judges. For example, see the discussion in page 166 of the study by Yoon (2006).

conclude in Section 7.

## 2 Model

We consider a finite-horizon dynamic model of judges' decisions after entering the bench. The length of a period is two years. (Note that one term of a judge consists of two periods<sup>14</sup>.) We assume that the earliest age when a judge can enter the bench is 29, and if he stays on the bench to the age of 75, he must leave the bench at that point<sup>15</sup>. A judge makes two different decisions every period. At the beginning of each period, a judge makes his sentencing decision  $p_{it} \in \{H, SH, S, SL, L\}$ , where  $H$  denotes the harshest decision and  $L$  denotes the most lenient one.<sup>16</sup> When he makes sentencing decisions, he considers his own preference over sentencing and the effect of sentencing decisions on his reelection prospects. At the end of each period, he makes a decision  $c_{it} \in \{Stay, Exit\}$  whether to (i) stay in the bench and run for reelection when the seat is up for reelection ( $c_{it} = Stay$ ) or (ii) exit from the bench ( $c_{it} = Exit$ ). If a judge exits from the bench, he can choose to have an outside legal job, or choose to retire. In making exit decisions, he compares his long-term payoff from the seat on the bench, and his payoff from outside options. Our model has three main components: (i) payoff from the seat on the bench, (ii) reelection probability, and (iii) post-exit (out-of-bench) payoff. After we describe these components in turn, we will clarify the timing of the events, and we will specify how judges' sentencing and exit decisions are made.

### 2.1 Payoff from the Seat in the Bench

The per-period payoff that a judge  $i$  derives from his seat on the bench in period  $t$ , denoted by  $v_{it}$ , consists of three components - (i) a fixed, non-sentencing-related component, (ii) a sentencing-related component, and (iii) the taste shocks  $(\zeta_{it}^H, \zeta_{it}^{SH}, \zeta_{it}^S, \zeta_{it}^{SL}, \zeta_{it}^L)$  attached

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<sup>14</sup>We assumed that one period is two years for three reasons. First, in our data, we observe 40% of the voluntary exits in the middle of a term. Second, as we will describe in Section 2.4, one of the state variables that may affect the reelection probability of appointed judges is realized in the middle of a term. Third, it allows for the possibility that judges will change their sentencing patterns within a term, as they get close to reelection.

<sup>15</sup>Age 29 is the youngest age observed in our data, and age 75 is the mandatory retirement age for district court judges in Kansas. In terms of legal credentials, candidates for Kansas state district court judgeships are required to have a minimum of 5 years' experience in the state bar.

<sup>16</sup>The five decisions  $H, SH, S, SL, L$  mean 'harsh', 'standard-harsh', 'standard', 'standard-lenient', and 'lenient', respectively, and they are based on sentenced jail time. We explain how the raw sentencing decisions are aggregated to these five decisions in Section 3.3.

to the sentencing decisions, drawn from the type I extreme value distribution with a scale parameter  $\sigma_Z$ . The payoff that is not related to the sentencing decision is a combination of the wage  $WB$  that he earns and the non-pecuniary benefit  $\alpha_B$  that he derives from the seat. The sentencing-related component of the payoff, denoted by  $u$ , is a function of his preference type  $T_i$  and his sentencing decision  $p_{it}$ . In summary, the per-period payoff from the bench, denoted by  $v(T_i, p_{it})$ , is

$$v(T_i, p_{it}) = WB + \alpha_B + u(T_i, p_{it}) + \zeta_{it}^P.$$

There are three possible preference types ( $T_i \in \{t_1, t_2, t_3\}$ ) that a judge can have, which are harsh, standard, and lenient types. Harsh type ( $t_1$ ), standard type ( $t_2$ ), and lenient type ( $t_3$ ) have sentencing decision  $H$ ,  $S$ , and  $L$  as their most preferred decision, respectively. The payoff  $u(T_i, p_{it})$  that a judge of each type derives from his decision  $p_{it} \in \{H, SH, S, SL, L\}$  is denoted as follows.<sup>17</sup>

When a judge has the preference type  $T_i = t_1$  (harsh type), then

$$u(p_{it}; T_i = t_1) = \begin{cases} 0 & , \text{ if } p_{it} = H \\ \gamma_{1SH} & , \text{ if } p_{it} = SH \\ \gamma_{1S} & , \text{ if } p_{it} = S \\ \gamma_{1SL} & , \text{ if } p_{it} = SL \\ \gamma_{1L} & , \text{ if } p_{it} = L \end{cases} .$$

When a judge has the preference type  $T_i = t_2$  (standard type), then

$$u(p_{it}; T_i = t_2) = \begin{cases} \gamma_{2H} & , \text{ if } p_{it} = H \\ \gamma_{2SH} & , \text{ if } p_{it} = SH \\ 0 & , \text{ if } p_{it} = S \\ \gamma_{2SL} & , \text{ if } p_{it} = SL \\ \gamma_{2L} & , \text{ if } p_{it} = L \end{cases} .$$

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<sup>17</sup>There are also judgeships in which the judges do not make any sentencing decisions throughout, and we classify these seats as ‘non-crime seats’. The non-crime-seat judges are typically specialized in handling administrative issues (i.e., they are ‘administrative judges’). For these judges, we assume that they get an additional fixed payoff  $\alpha_{NC}$ , and it replaces  $u(T_i, p_{it})$ .

When a judge has the preference type  $T_i = t_3$  (lenient type), then

$$u(p_{it}; T_i = t_3) = \begin{cases} \gamma_{3H} & , \text{ if } p_{it} = H \\ \gamma_{3SH} & , \text{ if } p_{it} = SH \\ \gamma_{3S} & , \text{ if } p_{it} = S \\ \gamma_{3SL} & , \text{ if } p_{it} = SL \\ 0 & , \text{ if } p_{it} = L \end{cases} .$$

Since we incorporate the non-pecuniary benefit  $\alpha_B$  in the per-period payoff, the value of  $u(T_i, p_{it})$  when a judge makes his most preferred decision is normalized to 0. Each type of judge has a single-peaked preference over sentencing. And, we flexibly estimate the payoff  $u(T_i, p_{it})$  when a judge deviates from his most preferred decision, without imposing any particular functional form. Since the payoff  $u(T_i, p_{it})$  when a judge makes his most preferred decision is normalized to be 0, the payoff when he deviates to other decisions is supposed to be negative, implying the ‘loss’ of payoff incurred.

As stated above, when a judge makes a sentencing decision  $p_{it}$ , he not only considers its effect on his utility in the current period, but he also considers its effect on his entire career, taking into account the fact that his decision may affect his reelection probability. Hence, we need to specify one’s reelection probability under the two institutions that we analyze.

## 2.2 Reelection Probability

Since the two systems have different reelection processes, we specify two separate but similar reelection probability functions for appointed and elected judges. We will describe state variables that affect the reelection probability, and then we will specify the reelection probability functions.

We first introduce the variables that are common to both appointed and elected judges. The first two state variables that affect the reelection probability are the two sentencing decisions ( $p_{i,t-1}$  and  $p_{it}$ ) that a judge makes in a term. Regarding the effect of judges’ sentencing decisions on reelection probability, we assume that voters take into account only the judge’s behavior in a term (the two periods) immediately prior to an election. That is, once a judge is re-elected to the seat, only the sentencing decisions in the new term affect the re-election probability in the next election<sup>18</sup>.

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<sup>18</sup>This assumption simplifies the state space of our model substantially. At the same time, it is close to the reality, since voters are often alleged to have ‘short-memory’ about politicians’ behavior.

As described above (footnote 17), there are also judgeships in which judges do not make any sentencing decisions (“non-crime seat”). We use a dummy variable ( $Noncrime_i$ ) that has value 1 when the judge belongs to the non-crime seat.

The next set of variables are three individual-level characteristics. These are the age ( $Age_{it}$ ), the tenure of a judge on the bench ( $Tenure_{it}$ ) counted as the number of periods served, and an unobserved electability type, which can be either ‘good’ or ‘bad’ ( $Etype_i \in \{G, B\}$ ).

The last set of state variables pertains to political factors. The first political variable is judges’ party affiliation, which is either Democrat or Republican ( $Party_i \in \{D, R\}$ ). Additionally, there are two district-level political variables, which are the political orientation of districts and the political climate. The political orientation of districts can be either conservative or liberal ( $Dist_i \in \{Con, Lib\}$ ) and is constant over time. It captures voters’ *long-term* preference over *criminal sentencing*<sup>19</sup>. On the other hand, the political climate  $SOD_{it}$  (‘state-of-the-district’) captures voters’ *short-term* preference over *parties*<sup>20</sup>. The political climate  $SOD_{it}$  can have three values ( $SOD_{it} \in \{1, 2, 3\}$ ), which are ‘favorable to Republicans’, ‘neutral’, ‘favorable to Democrats’, respectively<sup>21</sup>. We assume that  $SOD_{it}$  evolves stochastically over time, following a Markov process.

For appointed judges, there is a state-level state variable, which is the party affiliation of the governor. It can be either Democrat or Republican, and is denoted by  $Gov_t \in \{D, R\}$ . When an appointed incumbent judge loses in an up-or-down vote, the governor selects a new judge. Hence, the party affiliation of the governor may affect the voters’ expectation of their utility in case that they fail the incumbent judge. Therefore, we allow the governor’s party affiliation to affect appointed judges’ reelection prospects.

We denote the vector of state variables that affect the reelection probability by  $XR_{it}$ .

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<sup>19</sup>The classification criterion is described in footnote 6 in Section 1.

<sup>20</sup>The rationale for separating the long-term political orientation of districts and short-term political climate is as follows. When there is a nation-wide or state-wide issue that affects the overall popularity of the two parties, the election of local (district-level) offices can also be affected. For example, the skepticism about George W. Bush’s war on Iraq affected the overall popularity of Republicans in the 2006 elections. Hence, we need to incorporate this factor in the voters’ preference over parties. However, such an issue would not have a meaningful effect on voters’ preference over judges’ criminal sentencing. Hence, we use a short-term measure ‘political climate’ for preference over parties and long-term measure ‘political orientation of districts’ for voters’ preference over sentencing.

<sup>21</sup>We also measure  $SOD_{it}$  by the normalized vote share of Democratic candidates in the presidential and gubernatorial elections, which is a measure *ex-post* observed by the econometrician. The political climate is measured election by election, while the political orientation of districts is based on the average vote share throughout the period.



That is,

$$XR_{it} = (p_{i,t-1}, p_{it}, Noncrime_i, Age_{it}, Tenure_{it}, Etype_i, Party_i, Dist_i, SOD_{it}, (Gov_t)).$$

For elected and appointed judges, we exploit different kinds of variation in our data to identify the reelection probability function. In the reelection of elected judges, the number of contestants is *not* fixed by the rule itself. Hence, the relationship between distribution of vote share and reelection probability is unclear, and we use the binary (win/lose) outcome of elections for identification of the reelection probability function. The reelection probability of elected judges is modeled as a Probit. In contrast, the reelection process of appointed judges (up-or-down vote) always gives two fixed options to the voters. That is, a voter's choice is always between casting a yes-vote or a no-vote. In this case, there is a well-defined theoretical relationship between the distribution of vote share and the reelection probability function. Therefore, for appointed judges, we use variation in the vote share to identify the reelection probability function. We provide the details in the following section.

**Elected Judges :** Reelection outcome is determined by the combination of a latent variable, which is a function of the state vector  $XR_{it}$ , and an electoral shock. Specifically, given a judge's state vector  $XR_{it}$ , the reelection probability of the elected judge, denoted by  $WINP^{EL}$ , is

$$WINP^{EL} = \Pr\{Ind_{Eit} \geq 0\} = \Phi(Ind_E(XR_{it})) \quad (1)$$

in which

$$\begin{aligned} Ind_{Eit} &= Ind_E(XR_{it}) + \eta_{Eit}, \\ \eta_{Eit} &\sim N(0, 1), \end{aligned}$$

and  $\Phi(\cdot)$  is the cumulative distribution function of the standard normal distribution. (The exact specification of the latent variable  $Ind_E(XR_{it})$  is in Section B.1 in the appendix.) The latent variable  $Ind_E(XR_{it})$  consists of three components.

$$\begin{aligned} Ind_E(XR_{it}) &= Ind1_E(p_{it}, p_{i,t-1}, Dist_i, Party_i, Noncrime_i) \\ &\quad + Ind2_E(Age_{it}, Tenure_{it}, Etype_i) + Ind3_E(Party_i, SOD_{it}) \end{aligned}$$

The first part ( $Ind1_E$ ) pertains to the effect of sentencing decisions ( $p_{it}, p_{i,t-1}$ ). Since the preference of voters over sentencing in the liberal districts can differ from that in the con-

servative districts, we interact sentencing decisions with political orientation of the district ( $Dist_i$ ). Additionally, voters may have different prior views about judges from different parties, which affects the marginal effect of sentencing decisions. Hence, we also allow sentencing decisions to have different effects depending on the judges' party affiliation,  $Party_i$ . Since sentencing decisions are relevant only when judges are in seats that have been assigned criminal cases, we interact the sentencing-decision with the dummy variable,  $Noncrime_i$ . The second part of the latent variable ( $Ind2_E$ ) is composed of judges' individual-level characteristics -  $Age_{it}$ ,  $Tenure_{it}$ , and  $Etype_i$ . The third part ( $Ind3_E$ ) pertains to the fluctuation of voters' preference over parties. The party affiliation  $Party_i$  is interacted with the political climate  $SOD_{it}$ .

**Appointed Judges :** The reelection probability of appointed judges is based on the standard probabilistic voting model<sup>22</sup>. A voter  $j$  in the district of judge  $i$  at period  $t$  casts a yes-vote if

$$Ind_A(XR_{it}) + \varepsilon_{jt} \geq \eta_{Ait}$$

where the voter-level taste shock  $\varepsilon_{jt}$  and the district-level electoral shock  $\eta_{Ait}$  follow the normal distributions,

$$\begin{aligned} \varepsilon_{jt} &\sim N(0, 1) \\ \eta_{Ait} &\sim N(0, \sigma_A^2). \end{aligned}$$

For a realization of  $\eta_{Ait}$ , the vote share of the incumbent is

$$1 - \Phi(-Ind_A(XR_{it}) + \eta_{Ait}) = \Phi(Ind_A(XR_{it}) - \eta_{Ait}).$$

And, the *ex-ante* reelection probability of a judge with state vector  $XR_{it}$ , denoted by  $WINP^{APP}$ , is

$$\begin{aligned} WINP^{APP} &= \Pr \left\{ \Phi(Ind_A(XR_{it}) - \eta_{Ait}) \geq \frac{1}{2} \right\} \\ &= \Phi \left( \frac{Ind_A(XR_{it})}{\sigma_A} \right). \end{aligned} \quad (2)$$

The specification of the latent variable  $Ind_A(XR_{it})$  is similar to that of elected judges' latent variable,  $Ind_E(XR_{it})$ . (The exact specification of  $Ind_A(XR_{it})$  is in Section B.2 in

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<sup>22</sup>For the probabilistic voting model, see the seminal paper by Lindbeck and Weibull (1987). For an empirical application, see Strömberg (2007).

the appendix.) As stated above, there is one major difference between appointed and elected judges in the effect of party affiliation. The reelection process of appointed judges (up-or-down vote) imposes an unusual structure on reelection processes in that the voters may not always have the option to replace the party affiliation of the judges since the governor selects a new judge when the incumbent fails. Hence, the combination of the party affiliation and the political climate cannot take effect if the sitting governor's party affiliation is the same as the incumbent judge<sup>23</sup>.

### 2.3 Post-exit decision and payoff

To define a dynamic programming problem of a judge over his career, we need to specify the value of exiting from the bench. A judge's choice and payoff that follow after leaving the bench are as follows. A judge can choose to (i) retire ( $d_{it} = 1$ ) or (ii) have a full-time legal occupation ( $d_{it} = 2$ ).

When he chooses to work, his wage depends on his experience in private law practice before he entered the bench.<sup>24</sup> We specify a group of dummy variables ( $Expriv1$ ,  $Expriv2$ ,  $Expriv3$ ) for judges' experience prior to their tenure in the bench as follows.

$$\begin{aligned} Expriv1 &= \begin{cases} 1 & , \text{ if } 1 \leq \text{no. of years in private practice} \leq 5 \\ 0 & , \text{ otherwise} \end{cases} \\ Expriv2 &= \begin{cases} 1 & , \text{ if } 6 \leq \text{no. of years in private practice} \leq 10 \\ 0 & , \text{ otherwise} \end{cases} \\ Expriv3 &= \begin{cases} 1 & , \text{ if no. of years in private practice} \geq 11 \\ 0 & , \text{ otherwise} \end{cases} . \end{aligned}$$

The post-exit wage  $W_i$  of a judge with state vector ( $Expriv1_i$ ,  $Expriv2_i$ ,  $Expriv3_i$ ) is determined as follows.

$$\ln W_i = \beta_0 + \beta_1 \cdot Expriv1_i + \beta_2 \cdot Expriv2_i + \beta_3 \cdot Expriv3_i + \varepsilon_i^W$$

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<sup>23</sup>When an appointed judge faces reelection in the same year as a gubernatorial election, we allow party affiliation and political climate to have an effect on reelection, since voters have an option to change the governor.

<sup>24</sup>Judges also have variation in their length of experience in the public law office before their entry to the court, and variation in the length of tenure as a judge at the point at which they exit. We excluded these variables from the wage equation, since they were not important predictors of former judges' income in our data.

in which

$$\varepsilon_i^W \sim N(0, \sigma_W^2).$$

If he chooses to retire, he enjoys the value of leisure denoted by  $\alpha_L$ . On top of the post-exit wage or the value of leisure, a former judge can receive a pension. In Kansas, eligibility is determined by age and tenure. Further, the pension amount is determined by cohort (the time of entry to the court) and tenure<sup>25</sup>. When one solves a dynamic programming problem over his lifetime, he discounts future payoff with discount factor  $\delta_1$ , and he also takes into account his probability of death at each age, denoted by  $\pi_d(Age)$ , as well as the probability that he will eventually retire from his post-exit occupation, denoted by  $\pi_r(Age)$ <sup>26</sup>.

The per-period payoff and the present discounted value after the exit are summarized as follows. In case one chooses to retire, the per-period payoff denoted by  $UR_{it}$  is

$$UR_{it} = \alpha_L + \text{Pension}(Age_{it}, Tenure_{it}, Cohort_i),$$

and the present discounted value of complete retirement  $VR_{it}$  is

$$VR_{it} = \sum_{\tau=t}^{\tau=T} [\delta_1^{\tau-t} \Pi_{s=t}^{s=\tau} (1 - \pi_d(Age_{is})) \cdot UR_{i\tau}].$$

In case that one chooses to work, the per-period payoff, denoted by  $UW_{it}$ , is

$$UW_{it} = W_i + \text{Pension}(Age_{it}, Tenure_{it}, Cohort_i),$$

and the present discounted value  $VW_{it}$  is

$$VW_{it} = \sum_{\tau=t}^{\tau=T} [\delta_1^{\tau-t} \Pi_{s=t}^{s=\tau} (1 - \pi_d(Age_{is})) \times \{ \Pi_{s=t}^{s=\tau} (1 - \pi_r(Age_{is})) \cdot UW_{i\tau} + (1 - \Pi_{s=t}^{s=\tau} (1 - \pi_r(Age_{is}))) UR_{i\tau} \}].$$

Now, let us denote the vector of state variables that affect the post-exit payoff by  $XE_{it}$ .

<sup>25</sup>The pension rule is specified in Kansas state statute chapter 20 - article 26 (20-2610).

<sup>26</sup>As for the probability of death, we use the observed death rate at each age from the mortality data of the National Vital Statistics System. Regarding the retirement probability from the post-exit job, we parameterize it as a logistic function of age and use the estimated parameter values from Diermeier et al.(2005).

Table 3: Summary - Specification of Payoff and Reelection Probability Functions

State Variable	Per-period Payoff from the bench	Reelection Probability	Out-of-bench payoff
Electability Type	no	yes	no
Preference Type	yes	no	no
Sentencing Decision	yes	yes	no
Age	no	yes	yes
Tenure	no	yes	yes
Cohort	no	no	yes
Party	no	yes	no
District's Political Orientation	no	yes	no
Political Climate	no	yes	no
Governor	no	yes (appointed )	no
Pre-entry Career Details	no	no	yes

For judge  $i$  with state vector

$$XE_{it} = (Age_{it}, Tenure_{it}, Cohort_i, Expriv1_i, Expriv2_i, Expriv3_i), \quad (3)$$

the present discounted value of exit, denoted by  $VE(XE_{it})$ , is

$$\begin{aligned} VE(XE_{it}) &= E_{\epsilon} E_{\omega} \max \{ VW(XE_{it}, \epsilon_i^w) + \omega_{1it}, VR(XE_{it}) + \omega_{2it} \} \\ &= \int \sigma_E \ln (\exp(VW(XE_{it}, \epsilon_i^w) / \sigma_E) + \exp(VR(XE_{it}) / \sigma_E)) dF(\epsilon^W), \end{aligned}$$

in which  $\omega_{1it}$  and  $\omega_{2it}$  are drawn from the type I extreme value distribution with scale parameter  $\sigma_E$ .

In Table 3, we summarize the specification of payoff and reelection probability functions by showing whether each state variable is an argument of those functions or not.

## 2.4 Timing of Events

Because a state variable (political climate) that affects reelection probability evolves stochastically, when a judge makes sentencing decisions, he does not know what the exact state is going to be at the point of reelection. In this section, we clarify the timing of the events. There are two different cases. The first case is appointed judges with gubernatorial cycle

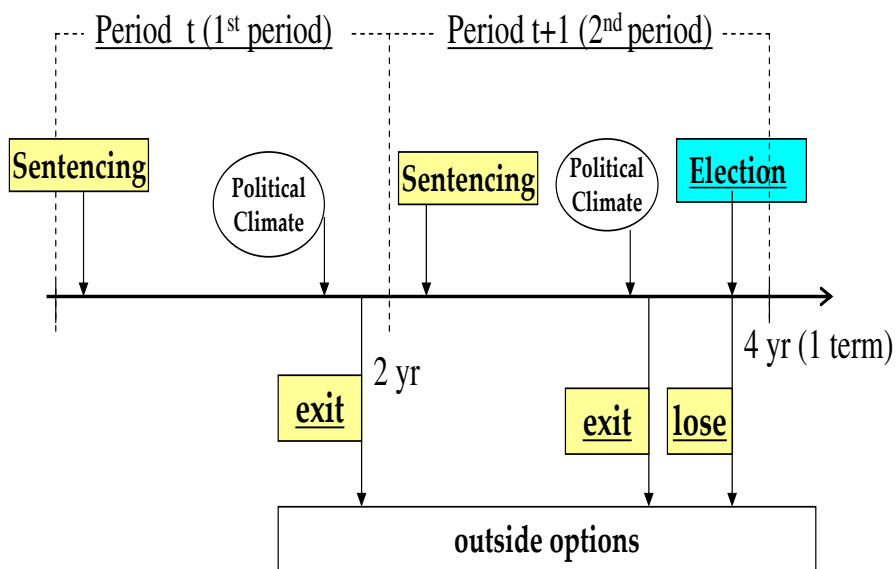


Figure 4: Timing of Events

and elected judges. The second case is appointed judges with presidential cycle<sup>27</sup>. The timing of events common to all judges is illustrated in Figure 4.

#### 2.4.1 Case 1 : Appointed Judges with Gubernatorial Cycle and Elected Judges

At the beginning of each period, a judge makes a sentencing decision  $p_{it}$  considering its effect on his current-period utility and his career prospects. Then, at the end of the period, he observes the political climate of his district ( $SOD_{it}$ ). After he observes the political climate, he decides whether to (i) stay (or run when the seat is up for reelection) or (ii) leave the bench. When a judge decides to run for reelection, he has to incur the cost of running, denoted by  $\alpha_R$ . Since the governor's party affiliation ( $Gov_t$ ) does not affect the reelection probability of elected judges, there is no difference between judges with the presidential cycle and the gubernatorial cycle. When judges are appointed, the governor's party affiliation may affect reelection depending on the electoral cycle that a judge faces. If a judge faces reelection in the same year as gubernatorial elections, governor's party affiliation is uncertain when he is up for reelection. Hence, party affiliation and political climate can always have an effect. That is, the sitting governor's party is not relevant to a

<sup>27</sup>As stated in Section 1.1.1, approximately sixty percent of appointed judges face reelection in the same year as presidential elections.

judge's reelection.<sup>28</sup>

## 2.4.2 Case 2 : Appointed Judges with Presidential Cycle

In case that appointed judges face reelection in the same year as presidential elections, the governor is elected when the judge is in the middle of a term. Once the governor is elected, if he is from the same party as the appointed incumbent judge, voters cannot change the party affiliation of the judge. Voters may take it into consideration, and in turn a judge may take into account such consideration by voters. In brief, for appointed judges facing presidential cycle, a state variable,  $Gov_t$ , which potentially affects his reelection is realized in the middle of their term.

We now formulate each decision made by judges. In the following sections 2.5 and 2.6, we clarify the state variables and the continuation value of judges' exit and sentencing decisions.

## 2.5 Exit Decision

We denote the vector of the state variables that affect exit decisions (net of sentencing decisions  $p_{i,t-1}$  and  $p_{it}$ ) by  $XC_{it}$ . Given that a judge, when making exit decisions, considers his payoff from outside options, chance of reelection, and payoff from the seat,  $XC_{it}$  is a combination of the state variables that affect the value of exit ( $XE_{it}$ , specified in (3) on page 20), variables that affect reelection probability, and his preference type,  $T_i$ .

$$XC_{it} = (T_i, XE_{it}, Noncrime_i, Etype_i, Party_i, Dist_i, SOD_{it}, Gov_t).$$

### 2.5.1 Second period of a term: when the seat is up for reelection

Let us first consider the situation in which one is in the second period of a term, i.e., when he is up for reelection. In making exit decisions, a judge compares the value of running, denoted by  $VRun$ , with the value of voluntary exit  $VE$ . The value of running  $VRun$  contains three factors : (a) the payoff from running itself  $\alpha_R$ , (b) the possibility of losing, which occurs with probability  $(1 - WINP)$  and yields the value of outside options

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<sup>28</sup>A slightly more sophisticated way of modeling this situation would be to incorporate voters' expectation about the next governor based on the current governor's party affiliation and the state-wide political situation. This specification showed no significant difference on results for appointed judges and increased the computational burden of our model. Hence, we excluded such a factor from our model, for the sake of parsimoniousness.

$VE(XE_{it})$ , and (c) the possibility of winning, which occurs with probability  $WINP$  and yields the value of being in the seat  $VC$ . Hence, the value of running (net of the taste shock) is

$$\begin{aligned} VRun(XC_{it}, p_{it}, p_{i,t-1}) &= \alpha_R + (1 - WINP(XR_{it})) \cdot VE(XE_{it}) \\ &\quad + WINP(XR_{it}) \cdot VC(T_i, XE_{i,t+1}, Noncrime_i, Etype_i, Party_i, \\ &\quad Dist_i, SOD_{it}(\cdot, Gov_{t+1})).^{29} \end{aligned}$$

The present discounted value evaluated at the end of the second period of a term, before the running decision, is

$$\begin{aligned} EV(XC_{it}, p_{it}, p_{i,t-1}) &= E_{\xi} \max\{VRun(XC_{it}, p_{it}, p_{i,t-1}) + \xi_{1it}, VE(XE_{it}) + \xi_{2it}\}, \\ &= \sigma_R \ln\{\exp(VRun(XC_{it}, p_{it}, p_{i,t-1})/\sigma_R) + \exp(VE(XE_{it})/\sigma_R)\} \end{aligned}$$

in which  $\xi_{1it}$  and  $\xi_{2it}$  are the taste shocks drawn from type I extreme value distribution with scale parameter  $\sigma_R$ .

### 2.5.2 First period of a term: when the seat is not up for reelection

If a judge is in the first period of a term, he does not face reelection at the end of the period. Hence, he compares the value of being in the seat and the value of voluntary exit. The continuation value of staying (net of the taste shock), denoted by  $VS$ , is

$$VStay(XC_{it}, p_{it}) = VC(T_i, p_{it}, XE_{i,t+1}, Noncrime_i, Etype_i, Party_i, Dist_i, SOD_{it}(\cdot, Gov_{t+1})).$$

The present discounted value evaluated immediately prior to the staying decision is

$$\begin{aligned} EV(XC_{it}, p_{it}) &= E_{\rho} \max\{VStay(XC_{it}) + \rho_{1it}, VE(XE_{it}) + \rho_{2it}\}, \\ &= \sigma_S \ln\{\exp(VStay(XC_{it}, p_{it})/\sigma_S) + \exp(VE(XE_{it})/\sigma_S)\} \end{aligned}$$

where  $\rho_{1it}$  and  $\rho_{2it}$  are the taste shocks drawn from the type I extreme value distribution with scale parameter  $\sigma_S$ .

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<sup>29</sup>Since  $SOD$  is realized at the end of each period, when the continuation value is evaluated at the beginning of period  $t + 1$ ,  $SOD_{it}$  is the relevant realization.



## 2.6 Sentencing Decision

Given the continuation value of staying-running/exit decision, the value of each sentencing decision can be written in a straightforward manner. For a judge with state vector  $XC_{it}$ , the continuation value of a ‘standard’ sentencing decision  $p_{it} = S$  (net of the taste shock), denoted by  $V_S$ , is <sup>30</sup>

$$V_S(XC_{it}) = WB + \alpha_B + u(T_i, S) + \delta_1(1 - \pi_d(Age_{it})) \cdot EV(XC_{it}; p_{it} = S)$$

In general, the value of a sentencing decision,  $p_{it} = \hat{p}$ , is

$$V_{\hat{p}}(XC_{it}) = WB + \alpha_B + u(T_i, \hat{p}) + \delta_1(1 - \pi_d(Age_{it})) \cdot EV(XC_{it}; p_{it} = \hat{p})$$

The value of being in the seat in the bench, evaluated at the beginning of a period is

$$VC(T_i, XE_{it}, Noncrime_i, Etype_i, Party_i, Dist_i, SOD_{i,t-1}(\cdot, Gov_t)) = E_{\zeta} \max_{p \in \{H, SH, S, SL, L\}} \{V_{\hat{p}}(XC_{it})\}.$$

The conditional choice probabilities for each decision, the likelihood function, and the specification of the unobserved heterogeneities will be described in Section 4. In the next section, we describe the data.

## 3 Data

We constructed a data set containing detailed information on 243 Kansas state district court judges who entered office since the 1976 general elections. For judges who left before 2006, we observe their complete tenure on the bench. For judges who stayed on the bench in 2006, the spell is right-censored. Among 243 judges, 116 judges are appointed and 127 judges are elected.

As for the party affiliation, 53.5 percent (62 judges) of appointed judges and 44 percent (56 judges) of elected judges are Democrats and the rest are Republicans. Of the appointed Democrats, 54.8 percent (34 judges) belong to conservative districts and 45.2 percent (28 judges) belong to liberal districts. Of the appointed Republicans, 59.3 percent (32 judges) belong to conservative districts, and 40.7 percent (22 judges) belong to liberal districts. Of the elected Democrats, 21.4 percent (12 judges) belong to conserva-

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<sup>30</sup>This formula is based on the case in which one is in the first period of a term. When a judge is in the second period of a term, the only difference is that  $p_{i,t-1}$  should be included in the state vector.

Table 4: Summary : Judge Composition

Total : 243 judges			
Appointed		Elected	
116 (47.7%)		127 (52.3%)	
Democrat	Republican	Democrat	Republican
62 (53.5%)	54 (46.5%)	56 (44%)	71 (56%)

tive districts and 78.6 percent (44 judges) belong to conservative districts. Of the elected Republicans, 43.7 percent (31 judges ) belong to conservative districts and 56.3 percent (40 judges) belong to liberal districts. These 243 judges provide 1541 observations

Table 5: Composition of Appointed Judges

Appointed : 116 Judges			
Democrat		Republican	
Conservative district	Liberal district	Conservative district	Liberal district
34 (54.8%)	28 (45.2%)	32 (59.3%)	22 (40.7%)

Table 6: Composition of Elected Judges

Elected : 127 Judges			
Democrat		Republican	
Conservative district	Liberal district	Conservative district	Liberal district
12 (21.4%)	44 (78.6%)	31 (43.7%)	40 (56.3%)

of staying-running/exiting decisions<sup>31</sup>. The data set that we constructed is divided into four main parts : election data, individual-level characteristics, sentencing behavior, and post-exit outcomes.

<sup>31</sup>Details of the exit decisions in our data are summarized in Section C.1 in the appendix.

### 3.1 Election Outcomes

The election data contains the outcome of judicial elections from 1980 to 2006<sup>32</sup>. For the 243 judges in our sample, we have 722 elections in total (420 for appointed judges and 302 for elected judges). We observe 16 incumbent defeats for elected judges and no defeats for appointed judges<sup>33</sup>. We summarize the reelection rate of elected judges under six different combinations of party affiliation and political climate in Table 7.

Table 7: Reelection Rate of Elected Judges in the Data

Political Climate	Democrat	Republican
Favorable to Republican	88.9 %	94.4 %
Neutral	91.7 %	97.1 %
Favorable to Democrat	98.2 %	66.7 %

As part of the election data, we also track two variables that affect the reelection probability of judges. The first variable is the governor’s party affiliation, which affects the reelection probability of appointed judges. For the period of 1976-2006, Kansas had six different governors. Three were Republicans and the other three were Democrats<sup>34</sup>. In case of appointed judges, we used the party affiliation of the appointing governor as the party affiliation of the judge<sup>35</sup>. In case of elected judges, we used the explicit party affiliation of judges as appeared on the ballot.

The second measure we construct is the political climate (‘state-of-the-district’). As described earlier (footnote 21), the state-of-the-district measure is based on each judicial district’s normalized vote share of Democrats in presidential and gubernatorial elections. When there are only Democratic and Republican candidates, the measure is simply based on the vote share of the Democratic candidate. When there is a third candidate, it is based on the Democrat’s vote share divided by the sum of Democratic and Republican vote share. We construct the state-of-the-district variables from presidential vote shares and

<sup>32</sup>Since the earliest entry year of the judges in our data is 1976, the earliest relevant reelection occurred in 1980.

<sup>33</sup>The overall defeat rate is relatively small in Kansas. However, we identify the parameters of the reelection probability function not only from the actual observations of the defeat, but also from the voluntary exit rates, which is one of the advantages of our model.

<sup>34</sup>During the period of our data, the party affiliation of the governor was Republican (1975-1979) - Democrat (1979-1987) - Republican (1987-1991) - Democrat (1991-1995) - Republican (1995-2003) - and Democrat (2003-).

<sup>35</sup>This way of coding is consistent with the way that the judges’ party was coded in other studies of judges that do not have explicit party labels. For example, see Yoon (2006).

gubernatorial vote shares separately, because the meaning of the state-level Republican and Democratic parties can differ from the meaning of the national ones. However, we kept the frequencies of the three states ('favorable to Republican', 'neutral', and 'favorable to Democrat') consistent across the presidential elections and gubernatorial elections. In our data, judges face the three states 'favorable to Republican', 'neutral', and 'favorable to Democrat' for 30.1% , 47.2%, and 22.7% of the time, respectively. The details of the classification and the relative frequency are in Section C.2 in the appendix.

### **3.2 Individual Judges' Characteristics**

The set of individual-level characteristic variables contain each judge's age, tenure on the bench, cohort (entry time), and the pre-entry experience in the private practice of law. The mean entry age is 44.7 years for appointed judges and the standard deviation is 7.3 years; for elected judges, the mean entry age is 46.3 years, and the standard deviation is 8 years. The mean number of periods of tenure on the bench that we observe is 7.2 periods (14.4 years) for the appointed judges and 5.6 periods (11.2 years) for the elected judges. (Since the data is right-censored, the mean tenure in reality would be higher than the statistics from our data.) We summarize the overall distribution of the judges' characteristics in Table 8.

### **3.3 Sentencing Decisions**

The data set of the sentencing decisions is created from the raw data that contains all the non-drug<sup>37</sup> felony crime sentencing outcomes from mid-1996 to mid-2006 in Kansas<sup>38</sup>. The raw data contains on average of 5249 cases every year. Further, it contains detailed case characteristics about each case such as defendants' criminal history, the primary offense, the severity level of the offense, and the name of the sitting judge. (The details of the raw sentencing data are in Section C.3 in the appendix.)

We construct the aggregate sentencing outcome of each two-year period for each judge. In our data, each judge handles on average 68 cases during each two-year period. The

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<sup>36</sup>The relative frequency of the judges who have more than 10 years of private practice experience is disproportionately higher than the other categories. However, we decided not to break down this category, since it did not improve the performance of the model.

<sup>37</sup>We excluded drug-related cases because voters' preference over drug-related issues may not be comparable to voters' preference over non-drug cases. See Flanagan and Longmire (1996) for details on voters' view about drug-crimes and non-drug crimes. Excluding drug-related cases is also consistent with other research on criminal sentencing in the literature, e.g., Huber and Gordon (2007).

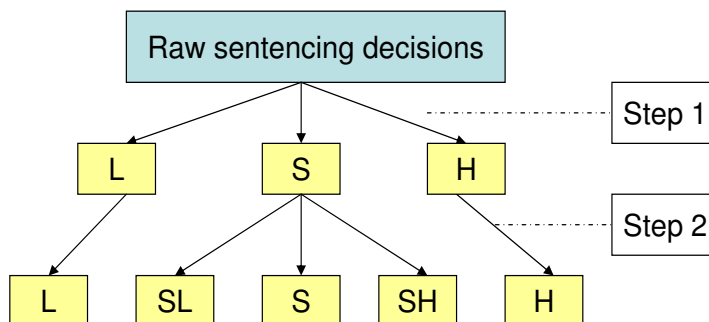
<sup>38</sup>Since the district court has original jurisdiction over felony crimes, there is no issue of case selection.

Table 8: Distribution of Entry Age, Tenure, Cohort, and Pre-entry Experience

		Appointed		Elected	
		Frequency	Proportion(%)	Frequency	Proportion(%)
Entry Age	Under 40	43	37.07	31	24.41
	41-50	44	37.93	61	48.03
	51-60	26	22.41	27	21.26
	over 60	3	2.59	8	6.30
Observed Length of Tenure	under 10 years	38	32.76	68	53.54
	11 - 20 years	56	48.28	47	37.01
	21 - 30 years	22	18.96	12	9.45
Cohort (Entry time)	before 1987	47	40.52	43	33.86
	after 1987	69	59.48	84	66.14
Number of years in Private Practice <sup>36</sup>	0 years	5	4.31	8	6.30
	1-5 years	15	12.93	15	11.81
	6-10 years	19	16.38	29	22.83
	10+ years	77	66.38	75	59.06

weight of each criminal case used in the aggregation of sentencing decisions is based on the standard prison time of the case specified in the law. Since high-profile crimes such as murder and rape have higher standard prison time specified in the law, compared with other offenses, high-profile offenses receive higher weight in the aggregation process. The aggregation of sentencing decisions consists of two steps.

Figure 5: Aggregation of Sentencing Decisions



In the first step, the aggregation of decisions in a judge-period is divided into three categories (*H*, *S*, and *L*). If the aggregation in the first step results in classification into *H* or *L*, no further classification occurs. In the second step, we divide category *S* to three

different sub-categories : *SH*, *S*, and *SL*. In both steps, we track whether the sentenced jail time in each case was minimum, standard, or maximum<sup>39</sup>.

Let us consider the following example (Table 9 and Table 10). Suppose that a judge

Table 9: Example : Aggregation of Sentencing Decisions (1st step)

Case	Sentencing			Weight
	L(minimum)	S(standard)	H (maximum)	
A	✓			9
B		✓		66
C			✓	160
D	✓			43
E		✓		140
F	✓			12
Total Score	64	206	160	.
Decision : S(Standard)				

makes decisions on six cases A, B, C, D, E, and F in a period as follows: A-lenient (i.e., minimum jail time), B-standard, C-harsh (i.e., maximum jail time), D-lenient, E-standard, and F-lenient. Further, suppose that the primary offense of each case yields the standard prison time of 9, 66, 160, 43, 140, and 12 months, respectively. In aggregate, lenient, standard, and harsh decisions receive a total score of 64, 206, and 160 months. Since the standard decision (*S*) has the highest score, the sentencing outcome in the period is classified as *S* in this first step. In the second step, we divide class *S* into three different sub-classes (*SL*, *S*, *SH*) by giving double weights to cases with a high level of severity (the cases that belong to the severity level I ~ V out of ten levels). In our example, *S* is still the category that receives the highest score in the second step. Hence, the final result of aggregation is *S*. (If *L* or *H* received the highest score in the second step, the final classification result would have been *SL* or *SH*, respectively.) As stated above, the judge-period decisions that were classified as *H* in the first step continue to be classified as *H*. And, the judge-period decisions that were classified as *L* in the first step continue to be classified as *L* in the second step.

Standard prison time is a conventional measure employed in criminology to weight

<sup>39</sup>As shown in the guideline table in Section A in the appendix, the minimum, standard, and maximum jail times are given in each case, and judges usually sentence one of the three jail times. Judges' deviation from those three options is rare, and the codification into minimum, standard, and maximum is in the raw data, and it is not a judgement made by us

Table 10: Example : Aggregation of Sentencing Decisions (2nd step)

Case	Sentencing			Weight
	L(minimum)	S(standard)	H (maximum)	
A	✓			9
B		✓		132
C			✓	320
D	✓			43
E		✓		280
F	✓			12
Total Score	64	412	320	.

Decision : S(Standard)

criminal cases of heterogeneous severity. We also tested the robustness of our classification using the Wolfgang-Sellin Index, another traditional measure of severity used in criminology. (See Sellin and Wolfgang (1978) for details.) The classification based on the two different weights gave almost identical results.

The aggregation described above yields 623 judges-periods of sentencing decisions. In Figure 6, we summarize the relative frequency of five sentencing decisions for four different judge groups : appointed Democrats, appointed Republicans, elected Democrats, and elected Republicans. In the figure, we observe two notable patterns. The first notable

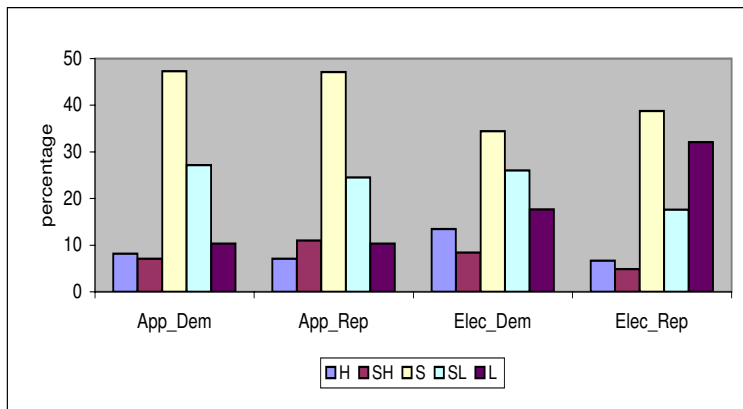


Figure 6: Relative Frequency of the Sentencing Decisions (%)

pattern is the proportion of standard decisions (S) across the two systems. When judges are appointed, the relative frequency of standard decisions is substantially higher than

that of elected judges, regardless of party affiliation<sup>40</sup>. (The difference in the proportion of standard decisions between appointed and elected judges is more than 10 percentage points.) The other pattern we observe is the difference across parties. When judges are appointed, there is almost no difference between Democrats and Republicans. In contrast, when judges are elected, there is a non-negligible difference between the two parties<sup>41</sup>. Moreover, elected Republicans show a relatively more lenient pattern of sentencing decisions than elected Democrats, which may contradict the conventional view about the relationship between parties and attitudes to crime. In Section 5, these two patterns will be discussed in conjunction with the reelection concerns that judges from different parties have as well as the distribution of preference types under the two systems.

### 3.4 Post-exit Outcomes

The last part of the data set is judges' post-exit outcomes. Among 243 judges in the sample, 84 judges exited the court before the year 2006<sup>42</sup>. For these judges, we observe whether they exited voluntarily, or they were defeated in the reelection. Sixty-eight judges (31 appointed and 37 elected) left through voluntary exit, and 16 judges (all 16 elected) left through defeat. Hence, failure in reelection accounts for 19 percent of all the judges who exited during the period, and 30 percent of elected judges who exited. For these 84 judges who exited, we observe whether they worked in another legal occupation (43 judges), or they retired completely (41 judges). In case where a judge took another legal job, we observed the characteristics of the law practice. For former judges who work for public office as prosecutors or county attorneys, we observe their income level directly. For those entering private law practice after exit, we conducted imputation of income based on the observed characteristics such as the size of the practice and the organizational rank, which are important determinants of income from law practice<sup>43</sup>.

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<sup>40</sup>The difference in sentencing decisions between appointed and elected judges is statistically significant at the 1% level under  $\chi^2$ -test.

<sup>41</sup>The difference in sentencing decisions between elected Democrats and Republicans is statistically significant at the 1% level under  $\chi^2$ -test.

<sup>42</sup>Thirteen judges left the district court during this period by being promoted to higher courts. Since their career as judges continue when they are promoted, we do not count these judges as judges who exited.

<sup>43</sup>The information on judges' post-exit outcomes is mainly based on the Kansas Legal Directory, an exhaustive listing of lawyers published by the Kansas Bar Association. In imputing lawyers' income, we follow the approach taken by Diermeier et al. (2005). For the specific relationship between observable characteristics and lawyers' income, we used the results from Heinz et al. (2005) with regional adjustments for billing rates.



## 4 Solution and Estimation

Our model is solved by backward induction from the last period and estimated with the simulated maximum likelihood. For the construction of the likelihood function, we need the conditional probability of the choices (sentencing decisions and exit decisions) at each state point. We will specify the conditional probability from the last choice (occupation choice after the exit from the bench) to the exit decision and the sentencing decision. Then, we will describe the distribution of unobserved heterogeneity (the electability type and the preference type). In the last part of this section, we will specify the likelihood function.

### 4.1 Calculating conditional probabilities

**Choice probability after exit :** As stated in the model, a judge's payoff after the exit from the bench depends on his state vector

$$XE_{it} = (Age_{it}, Tenure_{it}, Cohort_i, Expriv1_i, Expriv2_i, Expriv3_i).$$

An exited judge with state vector  $XE_{it}$  observes the realization of the uncertainty  $\varepsilon_i^W$  in his wage and chooses between the present discounted value of a legal occupation ( $VW_{it}$ ) and that of complete retirement ( $VR_{it}$ ). Since he has the taste shock  $(\omega_{1it}, \omega_{2it})$  drawn from type I extreme value distribution with scale parameter  $\sigma_E$ , the conditional probability of complete retirement (as opposed to taking another legal job) is as follows.

$$\Pr(d_{it} = 1 | XE_{it}) = \int \frac{\exp(VR(XE_{it})/\sigma_E)}{\exp(VR(XE_{it})/\sigma_E) + \exp(VW(XE_{it}, \varepsilon_i^W)/\sigma_E)} dF(\varepsilon^W).$$

**Choice probability of an exit decision :** When a judge is in the second period of a term, his choice is between running, which yields the continuation value  $VR(XC_{it}, p_{it}, p_{i,t-1})$ , and voluntarily exiting, which yields the continuation value  $VE(XE_{it})$ . Given that we have taste shocks  $(\xi_{1it}, \xi_{2it})$  drawn from type I extreme value distribution with scale parameter  $\sigma_R$ , the probability that a judge will choose to run for reelection is

$$\Pr(c_{it} = Stay | XC_{it}, p_{it}, p_{i,t-1}) = \frac{\exp(VRun(XC_{it}, p_{it}, p_{i,t-1})/\sigma_R)}{\exp(VRun(XC_{it}, p_{it}, p_{i,t-1})/\sigma_R) + \exp(VE(XE_{it})/\sigma_R)}.$$

When the judge is in the first period of a term, his choice is between staying, which gives value  $VS(XC_{it}, p_{it})$ , and exiting, which yields value  $VE(XE_{it})$ . The probability that the

incumbent will choose staying on the bench is as follows.

$$\Pr(c_{it} = Stay|XC_{it}, p_{it}) = \frac{\exp(VStay(XC_{it}, p_{it})/\sigma_S)}{\exp(VStay(XC_{it}, p_{it})/\sigma_S) + \exp(V E(XE_{it})/\sigma_S)}.$$

**Choice probability of a sentencing decision :** Finally, we calculate the choice probability of sentencing decisions. Recall that the value of a sentencing decision  $p_{it} = \hat{p}$ , net of the taste shock, is

$$V_{\hat{p}}(XC_{it}) = WB + \alpha_B + u(T_i, \hat{p}) + \delta_1(1 - \pi_d(Age_{it})) \cdot EV(XC_{it}; p_{it} = \hat{p}).$$

It is straightforward to calculate the choice probability of a sentencing decision  $p_{it} = \hat{p}$  as follows<sup>44</sup>

$$\Pr(p_{it} = \hat{p}|XC_{it}) = \frac{\exp(V_{\hat{p}}(XC_{it})/\sigma_Z)}{\sum_p \exp(V_p(XC_{it})/\sigma_Z)}.$$

## 4.2 Distribution of the Unobserved Heterogeneity

As introduced in the model, we have two kinds of unobserved heterogeneity. One is binary electability type ( $Etype_i \in \{G, B\}$ ), which affects judges' reelection probability. We allow the distribution of this type to depend only on whether the judge was appointed or elected. The other heterogeneity is the preference type ( $T_i \in \{t_1, t_2, t_3\}$ ). For the preference type, we allow the distribution to differ not only across systems, but also across parties. Hence, we have four different distributions of preference types, based on whether judges are elected or appointed and their party affiliation.

## 4.3 Estimation

In this subsection, we specify the likelihood function. We formulate the likelihood contribution of each observation in turn. First, we begin with the observation after exit.

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<sup>44</sup>The formula is based on the case in which one is in the first period of a term. When a judge is in the second period of a term, the only difference is that we include  $p_{i,t-1}$  in the state vector.

### 4.3.1 Observation after Exit

Applying the choice probabilities that we specified in Section 4.1, the likelihood of observing choice  $d_{it}$  after exit, denoted by  $L_{it}^E$ , is

$$L_{it}^E = [\Pr\{d_{it} = 1|XE_{it}\}]^{I[d_{it}=1]} \\ \times [\Pr\{d_{it} = 2|XE_{it}\} \Pr(W_{it}|XE_{it})]^{I[d_{it}=2]}.$$

### 4.3.2 Sequence of choices in a given period

Next, we specify the likelihood of the sequence of choices - sentencing decision, exit decision and the choice after exit. Since the probability of exiting from the seat is different depending on whether or not the seat is up for reelection, we specify the likelihood function separately for those two different cases. First, when a judge is in the first period of a term, he initially makes a sentencing decision, and then he makes a staying decision. If he chooses to exit, then we observe the choice after exit.

$$L_{it}^1(XC_{it}) = \Pr\{p_{it}|XC_{it}\} \cdot \Pr\{c_{it} = Stay|XC_{it}, p_{it}\}^{I[c_{it}=Stay]} \\ \cdot [\Pr\{c_{it} = Exit|XC_{it}, p_{it}\} L_{it}^E]^{I[c_{it}=Exit]}.$$

Second, if a judge is in the second period of a term, the seat is up for reelection. Hence, we may have another kind of observation, which is the reelection result. Let us denote the reelection result by a dummy variable  $Lose_{it}$  ( $Lose_{it} = 1$  when a judge loses the reelection bid). Then, the likelihood contribution of the sequence of choices in a given period is

$$L_{it}^2(XC_{it}, p_{i,t-1}) = \Pr\{p_{it}|XC_{it}, p_{i,t-1}\} \times [\Pr\{c_{it} = Stay|XC_{it}, p_{i,t-1}, p_{it}\} \\ \cdot \{(1 - Lose_{it}) \cdot WINP(XR_{it}) + Lose_{it} \cdot (1 - WINP(XR_{it})) L_{it}^E\}]^{I[c_{it}=Stay]} \\ \times [\Pr\{c_{it} = Exit|XC_{it}, p_{it}, p_{i,t-1}\} L_{it}^E]^{I[c_{it}=Exit]}.$$

### 4.3.3 Likelihood of the Entire Career Observation

So far, we have specified the likelihood of the sequence of observations in a given period of a given preference type,  $T_i$ , and an electability type,  $Etype_i$ . By combining the sequence of observations and integrating over the possible preference and electability types, the contribution of an individual  $i$  who entered in period  $t_0$  and was in the court for  $t_i$  periods

is

$$L_i = \sum_{Etype_i} \sum_{T_i} \Pi_{t=t_0}^{t_0+t_i-1} L_{it}(T_i, Etype_i) \cdot \Pr(Etype_i) \cdot \Pr(T_i).$$

Finally, we have

$$L = \Pi_{i=1}^N L_i.$$

## 5 Results

In this section, we summarize the main empirical findings. We report the results for following three parts: reelection probability, payoff from the seat on the bench and the payoff of running for reelection, and the preference type distribution. (Parameter estimates that are not reported in this section are in Section B.3 and Section D in the appendix.) After the discussion of our main results, we also report the performance of our model in terms of goodness of fit.

### 5.1 Reelection Probability

The reelection probability function, a primary focus of our analysis, shows several interesting features. (Parameter estimates related to reelection probability is reported in Table 16 in Section B.3 in the appendix.)

**Party affiliation:** For elected judges, an important observable factor that affects reelection probability in both conservative and liberal districts is the combination of party affiliation and political climate. Table 11 summarizes the average reelection probability of elected judges under six different combinations of party affiliation and political climate, based on our estimates. When the political climate is favorable to Republicans or

Table 11: Average Reelection Probability of Elected Judges (Estimated)

Political Climate	Democrat	Republican
Favorable to Republican	91.2%	93.4 %
Neutral	92.8 %	92.2 %
Favorable to Democrat	98.2 %	72.3 %

neutral, the party affiliation has a small impact on reelection probability. However, when political climate is favorable to Democrats, there is a substantial difference (25.9 percentage point difference) between Democrats and Republicans. An interesting aspect of the

effect of party affiliation on reelection probability is the asymmetry between Democrats and Republicans. When a judge is Democrat, the maximum effect of political climate on reelection probability is 7 percentage points, while it is 21.1 percentage points when a judge is Republican. Given that Kansas is a deep-red state<sup>45</sup>, the incumbent Democratic judges seem to show very little vulnerability to political climate since they were selected under the state politics generally unfavorable to their party from the beginning<sup>46</sup>.

In contrast, the role of party affiliation in reelection probability for appointed judges shows a very different result. The average *vote share* of appointed judges under six different situations is summarized in Table 12<sup>47</sup>. (Table 12 is based on the case in which the party affiliation of the governor is not the same as the party affiliation of the appointed judges.) The overall level of vote share for appointed judges is very high, regardless of party affiliation and political climate. Even when the political climate is hostile to the

Table 12: Average Vote Share of Appointed Judges (Estimated)

Political Climate	Democrat	Republican
Favorable to Republican	75.1 %	76.8 %
Neutral	77.0 %	76.0 %
Favorable to Democrat	75.7 %	74.4 %

party that a judge is affiliated with, he is likely to obtain sufficient yes-votes to secure his seat.

**Sentencing Decision:** For elected judges, the effect of sentencing decisions critically depends on the political orientation of the district, i.e., whether a judicial district is conservative or liberal. Not only do voters’ preferences over sentencing decisions differ across the political orientation of districts, but the magnitude of the effect also varies. When a judicial district is conservative, the most preferred decision is the standard (*S*) decision, and the most lenient decision (*L*) is the least preferred. Further, the sentencing decision

<sup>45</sup>For presidential elections from 1950 to 2004, the average normalized vote share of Democratic candidates was 39%. Moreover, as of 2007, among 40 Kansas state senators, only 10 senators are Democrats.

<sup>46</sup>Even though there was an asymmetry in political climate classification (see Section C.2 in the appendix), it did not contribute to the asymmetry between parties in reelection probability. Even when we classify the political climate in the opposite asymmetric way, elected Democrats show strong stability in reelection across political climates.

<sup>47</sup>Note that we report different variables for elected and appointed judges in Table 11 and Table 12. Even though we estimated reelection probability for both elected and appointed judges, we exploited variation of different variables in the data due to the different reelection processes under the two systems. For the rationale behind using different variations, recall the discussion in Section 2.2.

has a substantial impact on reelection probability. On the other hand, when judges are in a liberal district, the lenient decision (*L*) is the most preferred, and the harshest decision (*H*) is the least preferred. Here, the magnitude of the effect of sentencing on reelection is much smaller than the case of conservative districts. Table 13 shows the average negative

Table 13: Impact of Sentencing Decisions on Reelection Probability (for the elected)

	Conservative district	Liberal district
Democrat	- 69.7	- 2.8
Republican	- 77.7	- 22.6

(unit : percentage point)

effect on the reelection probability when an elected judge changes his sentencing decision from the most preferred to the least preferred in the district. In liberal districts, there is also a substantial disparity between Democrats and Republicans in the effect of their sentencing on reelection. When Republicans make lenient sentencing decisions, they are more rewarded for their decisions than Democrats are in reelection. The marginal effect seems to be substantially larger for Republicans because of the conventional view that Republicans are harsher on crime than Democrats are.

For appointed judges, the effect of sentencing decisions is negligible regardless of the political orientation of the district or party affiliation. Table 14 shows the average impact on vote share when an appointed judge changes from the most preferred decision to the least preferred decision. Given the overall level of the vote share shown in Table 12 and small degree of effect on vote share shown in Table 14, even the judge with the least preferred decision has a secure seat.

Table 14: Impact of Sentencing Decisions on Vote Share (for the appointed)

Political Climate	Conservative District		Liberal District	
	Democrat	Republican	Democrat	Republican
Favorable to Republican	-5.1	-4.9	-3.9	-3.7
Neutral	-4.9	-4.9	-3.7	-3.7
Favorable to Democrat	-5.0	-5.1	-3.8	-3.9

(unit : percentage point)

## 5.2 Payoff from the seat and running

In the following section, we report our findings directly related to judges' payoff.

**Per-period payoff from being in the seat:** As introduced earlier, the per-period payoff from being on the bench is composed of two different parts. One is the fixed payoff (the sum of wage,  $WB$ , and the fixed non-pecuniary payoff,  $\alpha_B$ ) and the other is the payoff related to sentencing decisions. The estimated non-pecuniary benefits,  $\alpha_B$ , which judges get from the seat for a two-year period is \$129376<sup>48</sup>. Since judges' wages for a two-year period is around \$190,000, the non-pecuniary benefit is comparable to about 70 percent of the wage.

Regarding sentencing decisions, the payoff for each preference type of judge from each sentencing option is summarized in Table 15. The loss of payoff that each preference type incurs by deviating from his most preferred decision varies substantially across types. When a judge is the harsh type, the loss of payoff that he experiences by changing from his most preferred decision ( $H$ ) to other decisions is relatively small. Further, the payoff loss does not vary much across non-harsh decisions. In contrast, when a judge is the standard type, he incurs substantial loss of payoff by making decisions that are not standard ( $S$ ). The estimated payoff in Table 15 implies that the standard type of judge cares much about abiding by the law very strictly, while harsh and lenient type have more flexibility in their views on sentencing decisions. The overall loss of payoff shown in the table also implies that the overall payoff from the seat decreases substantially once we consider the payoff loss from sentencing decisions.

Table 15: Payoff from the sentencing decision for each preference type

	Preference Type		
	Type 1 (harsh type)	Type 2 (standard type)	Type 3 (lenient type)
H	0	-56187	-35217
SH	-15313	-28339	-34621
S	-15397	0	-2940
SL	-15776	-16128	-2861
L	-15969	-57310	0

( unit : dollars )

**Payoff from running for reelection:** Elected judges bear the cost of running, an amount

<sup>48</sup>All numbers that are expressed in dollar terms in this study are in 2005 US dollars

of \$173738 . The cost of running for appointed judges is lower at \$160136. (The estimates include both the pecuniary and non-pecuniary cost of running.) Elected judges seem to bear a larger amount of the running cost due to the competitive structure of the reelection process. The estimates also imply that judges’ payoff from the seat (net of the cost of running) is much lower in the second period of a term when they face reelection, compared with the first period of a term when they do not face reelection.

### 5.3 Estimated Preference Type Distribution

As described in Section 1, one of the main advantages of our analytical framework is that we can estimate the preference type distribution under the two systems. Since the two systems have different initial selection procedures, the estimated type distribution has important implications for the functioning of the two systems. In Figure 7, we show the estimated preference type distribution for four different groups of judges (appointed Democrat, appointed Republican, elected Democrat, and elected Republican). The dis-

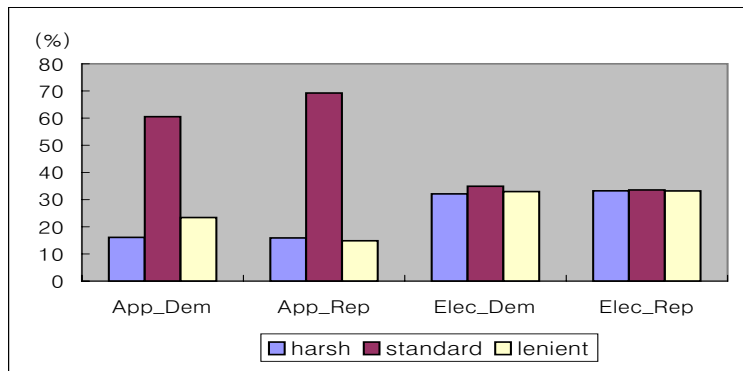


Figure 7: Estimated Preference Type Distribution

tribution shows an intriguing aspect. The proportion of the standard preference type is remarkably higher among appointed judges than elected judges, yielding a substantial homogeneity among appointed judges. In contrast, the distribution of elected judges’ preference is almost uniform. This aspect suggests a substantial difference in the functioning of the two systems with respect to the initial selection process. Because governors are held accountable by voters in the entire state, when judges are appointed by the governor, the overall preference of the entire state is reflected in the selection procedure as opposed to the local preference of each judicial district. Hence, the appointment procedure yields a very homogeneous group of judges in terms of sentencing preferences. Further, the ap-



pointed judges' preference is concentrated on the state-level median preference<sup>49</sup>. When judges are elected, the local preference of each judicial district is reflected, which yields substantial disparity in judges' sentencing preferences.

The difference in the estimated preference distribution between the two systems also indicates that the substantial difference in judges' behavior under the two systems, observed in Figure 2 in Section 1, can be partially attributable to the underlying preference distribution of judges selected under the two systems, as well as the difference in reelection processes. This issue will be discussed in greater detail in Section 6.

## 5.4 Goodness of Fit

Our model has good performance in fitting the main features of the data. To assess the performance of our model, we compare the main predictions of our model to their empirical counterparts in the following dimensions : (a) the distribution of sentencing decisions when judges are appointed and elected (Figure 8), (b) the distribution of elected judges' sentencing decisions across the political orientation of districts (Figure 9), (c) the distribution of elected judges' sentencing decisions across parties (Figure 10), (d) voluntary exit rates across age groups for appointed and elected judges (Figure 11), and (e) relative frequency of voluntary exit, success and failure in reelection when elected judges are up for reelection (Figure 12).

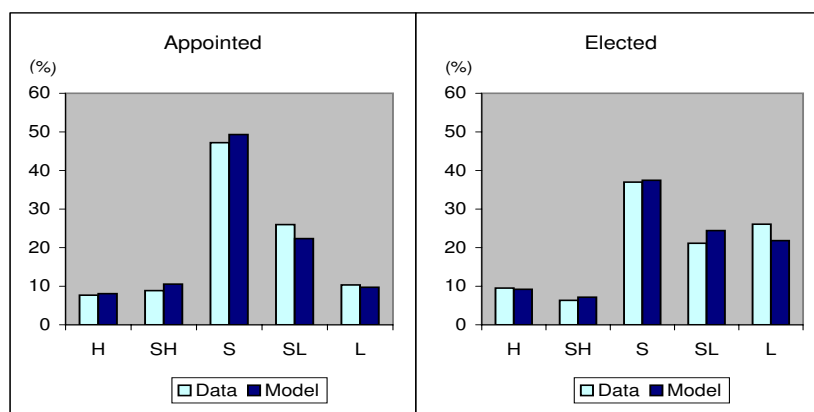


Figure 8: Goodness of fit - Sentencing Patterns (appointed vs. elected)

<sup>49</sup>In the governor's point of view, another way of pandering to the voters would be to appoint different types of judges for each judicial district. However, it would cause substantial heterogeneity across districts among judges selected by the same governor. Given that impartiality and consistency are main factors desired for the criminal justice system, such choice would not necessarily be rewarded by voters, when the selection is centralized as in the case with gubernatorial appointment.

Figure 8 shows that our model has good performance in fitting the major patterns of sentencing decisions. Specifically, it predicts the main pattern in the data that appointed judges have much a higher proportion of standard sentencing decision (*S*) than elected judges. Since appointed judges show little variation across parties and political orientation of the constituency (as shown in Figure 2 in Section 1 and Figure 6 in Section 3), in the following part, we will focus on the performance of our model in terms of predicting elected judges’ sentencing distribution across parties and districts.

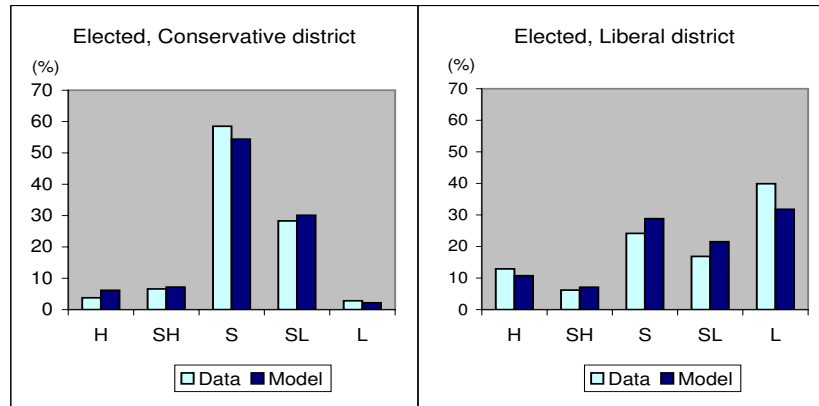


Figure 9: Goodness of fit - Sentencing Patterns (elected judges, across political orientation of districts )

Figure 9 compares the prediction of our model to its empirical counterpart with respect to elected judges’ sentencing behavior across the political orientation of districts. Even though there is a small discrepancy between data and the model when judges are in liberal districts, our model is able to predict the substantial difference in relative frequency of lenient decisions (*L*) between conservative and liberal districts, which was a focus of our analysis.

The next figure (Figure 10) shows elected judges’ sentencing distribution across parties. Our model fits the overall difference between the parties fairly well, despite a small discrepancy in the proportion of lenient decisions in liberal districts. In particular, our model replicates the pattern that Republican judges have a higher proportion of lenient decisions than Democratic judges do (as discussed in Section 3.3).

The next dimension where we evaluate the fit of our model is the exit rate. Figure 11 shows the prediction of the model with respect to the voluntary exit rates of appointed and elected judges across age groups. A pattern in the data is that the exit rate before the age of 50 is relatively low, and such a pattern is also predicted by the model. In the data, the

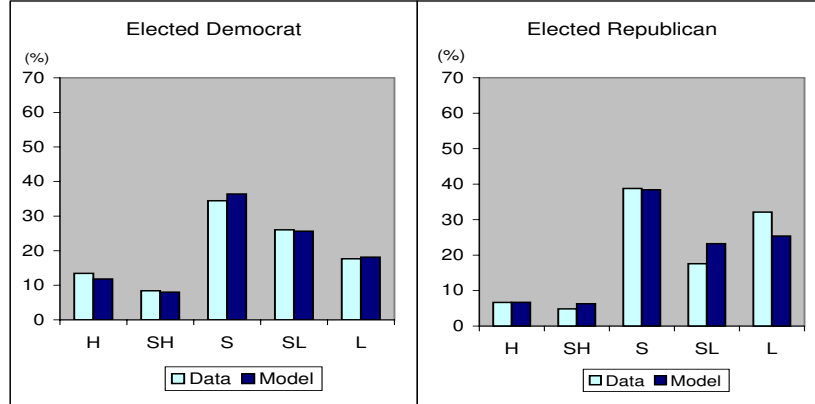


Figure 10: Goodness of fit - Sentencing Patterns (elected judges, across parties)

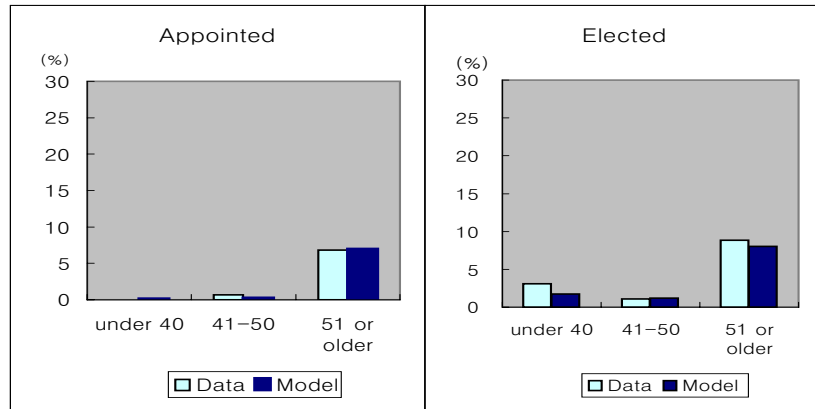


Figure 11: Goodness of Fit : exit rate by age

voluntary exit rate of elected judges is higher than appointed judges for all age groups, which is also predicted by our model.

The next figure (Figure 12) shows the relative frequency of voluntary exit, success in reelection, and failure in reelection when elected judges are in conservative and liberal districts. Even though there are small discrepancies, the model is able to capture the major patterns fairly well, particularly if we consider the parsimoniousness of the specification of the payoff structure in our model.

## 6 Counterfactual Experiment

One good feature of our econometric framework is that we can conduct counterfactual experiments with the estimated model. In the following section, we introduce the purpose

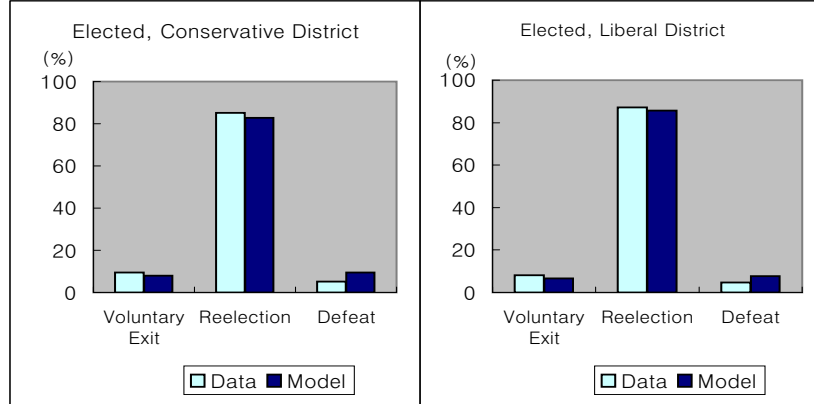


Figure 12: Goodness of Fit : exit and reelection - elected judges

of the experiments and discuss the results.

## 6.1 Removal of the Reelection (Life-Tenure)

Since one of our primary objectives of analysis is to assess the effect of the reelection on judges' sentencing behavior, we first conduct a simulation in which we remove reelection concerns by giving life-tenure to both appointed and elected judges. This experiment is not only useful for assessing the influence of reelection concerns on judges' behavior under the current systems, but it also has a concrete implication on change of the institutions. There has been a long debate about making judges more independent from political pressure<sup>50</sup>. And, life-tenure is widely used to shield judges from political forces. (For example, judges in the U.S. *federal* courts are life-tenured.) Our simulation suggests how current judges would be likely to behave should they receive life-tenure. Results are presented in Figure 13 and Figure 14. As we can expect from our discussion on reelection probability, appointed judges' sentencing behavior is not affected by the removal of reelection (Figure 13). On the other hand, it has a substantial impact on elected judges' behavior (Figure 14). For elected judges in conservative districts, it substantially increases the proportion of lenient decisions ( $L$ ). When elected judges are in liberal districts, giving life-tenure decreases the proportion of lenient decisions ( $L$ ) by half. This counterfactual experiment confirms our interpretation that the two systems differ substantially in terms of the reelection concern that judges face.

Another notable feature of the result is the difference between appointed and elected

<sup>50</sup>For example, see <http://www.abanet.org/judind/home.html> for the American Bar Association's discussion about this issue.

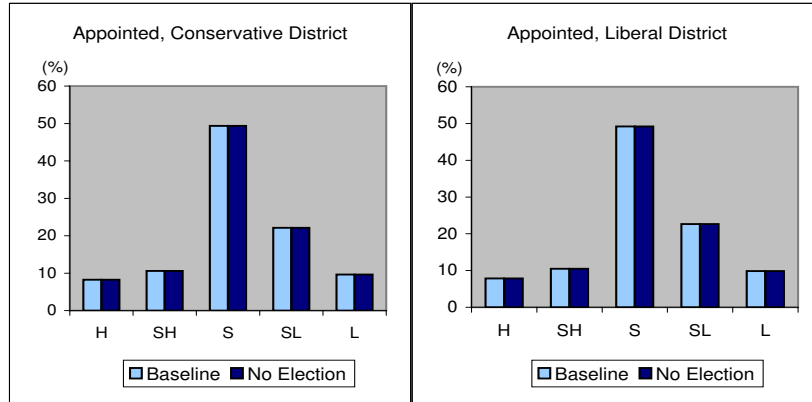


Figure 13: Experiment : Removal of the Reelection (appointed judges)

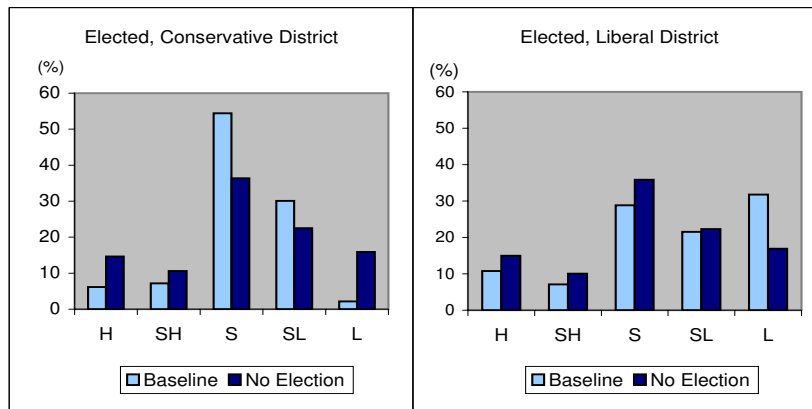


Figure 14: Experiment : Removal of the Reelection (elected judges)

judges after receiving life-tenure. Even after removing the reelection concern, there is a substantial difference between appointed and elected judges' sentencing behavior in terms of disparity. Under life-tenure, appointed judges make standard sentencing decisions (S) 49% of the time, while elected judges do only 36% of the time. Hence, even though the reelection concern plays an important role in the difference in elected judges' behavior across conservative and liberal districts, the overall differences in elected judges' behavior can be partially attributed to the underlying preference distribution (i.e., the initial selection).

## 6.2 Change of Reelection Processes

In the next counterfactual experiment, we exchange the reelection processes under the two systems. We let appointed judges face the competitive reelection process, and let

elected judges face the up-or-down reelection process. This experiment is motivated by the frequent switch of systems occurring during the last several decades. (See Hanssen (2004a) for details.) When a change of the judicial selection rule is proposed in a state, one aspect that is frequently overlooked is the fact that there will be judges who were selected in previous systems and stay in the court to continue making decisions. Through our counterfactual experiment, we assess how the currently-sitting judges' behavior would change when judicial selection systems change from one to the other. The results are summarized in Figure 15 and Figure 16.

When the appointed judges face a competitive reelection process (Figure 15), it creates a disparity between conservative and liberal districts that they did not have under the up-or-down vote. It decreases the proportion of lenient decisions (*L*) from 9.6% to 1.4%

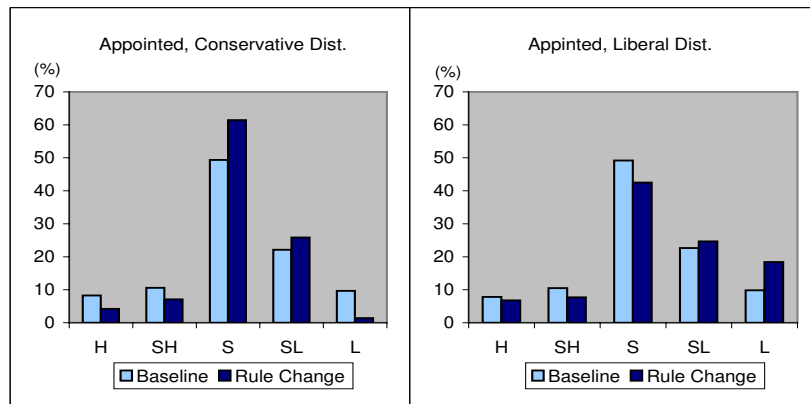


Figure 15: Experiment : Change of Reelection Processes (appointed judges)

in conservative districts. Further, it increases the proportion of lenient decisions from 9.8% to 18.3% in liberal districts. However, the degree of disparity between conservative and liberal districts is much smaller than the case when elected judges face a competitive reelection process (Figure 2 in Section 1). Because appointed judges' preference type distribution is highly concentrated on the standard type, their decisions in liberal districts would not show a frequency of lenient decisions comparable to that of elected judges even when they have serious reelection concerns. On the other hand, when elected judges face an up-or-down reelection process, their sentencing behavior is the same as the case where they receive life-tenure. The disparity between conservative and liberal districts vanishes, but there will still be a substantial difference of behavior, due to the heterogeneity of sentencing preferences.

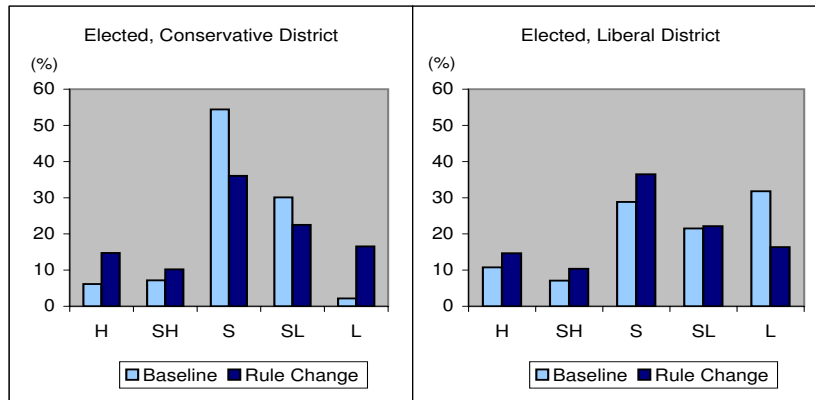


Figure 16: Experiment : Change of Reelection Process (elected judges)

## 7 Conclusion

In this study, we proposed a novel and rigorous approach to comparing two different systems for selecting and retaining judges. The main innovative features are as follows. First, by conjoining rich individual-level sentencing data with electoral outcomes and individual-level characteristics, we provide a more rigorous understanding of the relationship between judges' behavior and the reelection outcomes than the conventional aggregate-level analysis. Second, by explicitly estimating judges' preference type distribution jointly with reelection probability, we provide a novel and concrete understanding of the *selection* processes under the two systems. Finally, by conducting counterfactual experiments of changing the reelection processes, we separated out the impact of selection processes and reelection processes on appointed and elected judges' sentencing behavior.

Our analysis has shown that the competitive reelection process imposes serious reelection concerns on elected judges, while appointed judges are rubber-stamped by the voters. Moreover, elected judges' reelection process is much more influenced by political forces such as political climate, compared with that of appointed judges. Lastly, our estimation of the preference distribution shows that there is a substantial difference in judges' sentencing preferences across systems. Appointed judges are much more homogeneous in terms of sentencing preference, due to the centralized aspect of the gubernatorial appointment compared with district-level elections.

While our study provides an enhanced understanding of the actual functioning of judicial selection systems, there are remaining issues that require further research. First, we did not explicitly model potential candidates' decision to run in our framework. Since a lawyer's decision to become a judicial candidate is also affected by the judicial selection

mechanisms themselves, incorporating such a stage in the analysis would help to deepen our understanding of the systems. Second, in our data, we had information about individual judges only in terms of age, experience, and party affiliation. However, other individual characteristics such as race and gender may affect judges' decisions<sup>51</sup>. Further, how the judicial selection systems affect the composition of judges in terms of race or gender is an important issue in assessing the social impact of the systems. Third, in our paper, we focused only on criminal sentencing behavior. However, civil cases also constitute an important portion of judges' decisions, and documentation suggests a possible relationship between judicial selection mechanisms and civil case adjudication. (For example, see Tabarrok and Helland (1999).) To further understand judicial selection mechanisms, research on how judges' decisions in other areas are related to judges' reelection and voters' preference is needed.

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<sup>51</sup>For the effect of public officials' gender on policies, see Duflo and Chattopadhyay (2004).



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## A Kansas Criminal Sentencing Guidelines

Each felony case is classified based on the criminal history of defendants (category A ~ I) and the severity of primary offense (level I ~ X). For each category, the guideline gives three numbers - minimum, standard, and maximum jail time. The judge can choose any jail time between the minimum and the maximum.

**SENTENCING RANGE - NONDRUG OFFENSES**

Category →	A	B	C	D	E	F	G	H	I
Severity Level ↓	3+ Person Felonies	2 Person Felonies	1 Person & 1 Nonperson Felonies	1 Person Felony	3+ Nonperson Felonies	2 Nonperson Felonies	1 Nonperson Felony	2+ Misdemeanor	1 Misdemeanor No Record
I	653 620 592	618 586 554	285 272 258	267 253 240	246 234 221	226 214 203	203 195 184	186 176 166	165 155 147
II	493 467 442	460 438 416	216 205 194	200 190 181	184 174 165	168 160 152	154 146 138	138 131 123	123 117 109
III	247 233 221	228 216 206	107 102 96	100 94 89	92 88 82	83 79 74	77 72 68	71 66 61	61 59 55
IV	172 162 154	162 154 144	75 71 68	69 66 62	64 60 57	59 56 52	52 50 47	48 45 42	43 41 38
V	136 130 122	128 120 114	60 57 53	55 52 50	51 49 46	47 44 41	43 41 38	38 36 34	34 32 31
VI	46 43 40	41 39 37	38 36 34	36 34 32	32 30 28	29 27 25	26 24 22	21 20 19	19 18 17
VII	34 32 30	31 29 27	29 27 25	26 24 22	23 21 19	19 18 17	17 16 15	14 13 12	13 12 11
VIII	23 21 19	20 19 18	19 18 17	17 16 15	15 14 13	13 12 11	11 10 9	11 10 9	9 8 7
IX	17 16 15	15 14 13	13 12 11	13 12 11	11 10 9	10 9 8	9 8 7	8 7 6	7 6 5
X	13 12 11	12 11 10	11 10 9	10 9 8	9 8 7	8 7 6	7 6 5	7 6 5	7 6 5

## B Reelection Probability

### B.1 Latent Variable for Elected Judges

In this subsection, we describe the latent variable for the reelection probability of elected judges. As described in Section 2.2, latent variable  $Ind_E(XR_{it})$  is composed of three different parts.

$$Ind_E(XR_{it}) = Ind1_E(p_{it}, p_{i,t-1}, Dist_i, Party_i, Noncrime_i) \\ + Ind2_E(Age_{it}, Tenure_{it}, Etype_i) + Ind3_E(Party_i, SOD_{it}).$$

We specify the three parts in turn. The first part ( $Ind1_E$ ) measures the effect of sentencing decisions.

$$Ind1_E(p_{it}, p_{i,t-1}, Dist_i, Party_i, Noncrime_i) \\ = \phi_0 + I[Dist_i = Con] * I[Party_i = D] \{ \delta_2 \{ \phi_1 I[p_{i,t-1} = H] + \phi_2 I[p_{i,t-1} = SH] \\ + \phi_3 I[p_{i,t-1} = SL] + \phi_4 I[p_{i,t-1} = L] \} + \phi_1 I[p_{it} = H] \\ + \phi_2 I[p_{it} = SH] + \phi_3 I[p_{it} = SL] + \phi_4 I[p_{it} = L] \} I[Noncrime_i = 0] \\ + I[Dist_i = Lib] * I[Party_i = D] \{ \delta_2 \{ \phi_5 I[p_{i,t-1} = H] + \phi_6 I[p_{i,t-1} = SH] \\ + \phi_7 I[p_{i,t-1} = SL] + \phi_8 I[p_{i,t-1} = L] \} + \phi_5 I[p_{it} = H] \\ + \phi_6 I[p_{it} = SH] + \phi_7 I[p_{it} = SL] + \phi_8 I[p_{it} = L] \} I[Noncrime_i = 0] \\ + I[Dist_i = Con] * I[Party_i = R] \{ \delta_2 \{ \phi_9 I[p_{i,t-1} = H] + \phi_{10} I[p_{i,t-1} = SH] \\ + \phi_{11} I[p_{i,t-1} = SL] + \phi_{12} I[p_{i,t-1} = L] \} + \phi_9 I[p_{it} = H] \\ + \phi_{10} I[p_{it} = SH] + \phi_{11} I[p_{it} = SL] + \phi_{12} I[p_{it} = L] \} I[Noncrime_i = 0] \\ + I[Dist_i = Lib] * I[Party_i = R] \{ \delta_2 \{ \phi_{13} I[p_{i,t-1} = H] + \phi_{14} I[p_{i,t-1} = SH] \\ + \phi_{15} I[p_{i,t-1} = SL] + \phi_{16} I[p_{i,t-1} = L] \} + \phi_{13} I[p_{it} = H] \\ + \phi_{14} I[p_{it} = SH] + \phi_{15} I[p_{it} = SL] + \phi_{16} I[p_{it} = L] \} I[Noncrime_i = 0] \\ + \phi_{17} I[Noncrime_i = 1].$$

Since we do not impose any particular functional form for voters' preferences over sentencing decisions, sentencing decisions are entered as dummy variables in the latent variable. We also allow sentencing decisions from the first half of a term ( $p_{i,t-1}$ ) and the second half of a term ( $p_{it}$ ) to have different weights in reelection probability. The relative weight of sentencing decisions made in the first period of a term is denoted by  $\delta_2$ . (In

case of appointed judges, it will be denoted by  $\delta_3$ ).

The second part of the latent variable ( $Ind2_E$ ) pertains to individual judges' characteristics.

$$Ind2_E(Age_{it}, Tenure_{it}, Etype_i) = \phi_{18}I[Etype_i = G] + \phi_{19}Age_{it} + \phi_{20}Tenure_{it}.$$

The last part of the latent variable ( $Ind3_E$ ) captures the fluctuation in voters' preference over parties, by interacting party affiliation with political climate.

$$\begin{aligned} Ind3_E(Party_i, SOD_{it}) = & \phi_{21}I[SOD_{it} = 1] \times I[Party_i = D] \\ & + \phi_{22}I[SOD_{it} = 2] \times I[Party_i = D] \\ & + \phi_{23}I[SOD_{it} = 3] \times I[Party_i = D] \\ & + \phi_{24}I[SOD_{it} = 1] \times I[Party_i = R] \\ & + \phi_{25}I[SOD_{it} = 3] \times I[Party_i = R] \end{aligned}$$

## B.2 Latent Variable for Appointed Judges

The structure of the latent variable for appointed judges is similar to that for elected judges and consists of three parts.

$$\begin{aligned} Ind1_A(XR_{it}) = & Ind1_A(p_{it}, p_{i,t-1}, Dist_i, Noncrime_i) + Ind2_A(Age_{it}, Tenure_{it}, Etype_i) \\ & + Ind3_A(Party_i, SOD_{it}, Gov_t). \end{aligned}$$



The first part captures the effect of sentencing decisions.<sup>52</sup>

$$\begin{aligned}
& Ind1_A(p_{it}, p_{i,t-1}, Dist_i, Noncrime_i) \\
= & \psi_0 + I[Dist_i = Con] \{ \delta_3 \{ \psi_1 I[p_{i,t-1} = H] + \psi_2 I[p_{i,t-1} = SH] \\
& + \psi_3 I[p_{i,t-1} = SL] + \psi_4 I[p_{i,t-1} = L] \} + \psi_1 I[p_{it} = H] \\
& + \psi_2 I[p_{it} = SH] + \psi_3 I[p_{it} = SL] + \psi_4 I[p_{it} = L] \} I[Noncrime_i = 0] \\
& + I[Dist_i = Lib] \{ \delta_3 \{ \psi_5 I[p_{i,t-1} = H] + \psi_6 I[p_{i,t-1} = SH] \\
& + \psi_7 I[p_{i,t-1} = SL] + \psi_8 I[p_{i,t-1} = L] \} + \psi_5 I[p_{it} = H] \\
& + \psi_6 I[p_{it} = SH] + \psi_7 I[p_{it} = SL] + \psi_8 I[p_{it} = L] \} I[Noncrime_i = 0] \\
& + \psi_9 I[Noncrime_i = 1]
\end{aligned}$$

The second part of the latent variable pertains to judges' individual-level characteristics and is identical to that of elected judges.

$$Ind2_A(Age_{it}, Tenure_{it}, Etype_i) = \psi_{10} I[Etype_i = G] + \psi_{11} Age_{it} + \psi_{12} Tenure_{it}$$

The third part of the latent index captures the effect of party affiliation and political climate. We allow this part to take effect only when the judge's party affiliation differs from the governor's party affiliation.

$$\begin{aligned}
& Ind3_A(Party_i, SOD_{it}, Gov_t) \\
= & \{ \psi_{13} I[SOD_{it} = 1] * I[Party_i = D] + \psi_{14} I[SOD_{it} = 2] * I[Party_i = D] \\
& + \psi_{15} I[SOD_{it} = 3] * I[Party_i = D] + \psi_{16} I[SOD_{it} = 1] * I[Party_i = R] \\
& + \psi_{17} I[SOD_{it} = 3] * I[Party_i = R] \} \times \{ Party_i \neq Gov_t \}
\end{aligned}$$

### B.3 Parameter Estimates for Latent Variables

In Table 16, we report the parameter estimates for the reelection probability function of elected and appointed judges. For appointed judges, we report the estimates of the coefficients divided by the estimate of  $\sigma_A (= 0.1476)$  to make them conceptually comparable to the estimates for the elected judges. (See the formula (1) and (2) in Section 2.2.) And, because the effect of sentencing decisions is not interacted with party affiliation for

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<sup>52</sup> $Ind1_A$  is similar to  $Ind1_E$  of elected judges, but we do not interact sentencing decisions with party affiliation. Since the specification with such interaction did not make any significant difference on our results for appointed judges, we removed such interaction for the sake of parsimoniousness.

appointed judges, we simply repeat the same parameter estimates for Republicans and Democrats.

Table 16: Estimates : Reelection Probability Function

Variable	Elected	Appointed
Constant	-0.4635	5.5395
Weight on the 1st period	0.8788	0.2674
$I[Party_i = D] * I[Dist_i = Con] * I[p_{it} = H]$	-0.7307	0.5616
$I[Party_i = D] * I[Dist_i = Con] * I[p_{it} = SH]$	-0.6901	0.0074
$I[Party_i = D] * I[Dist_i = Con] * I[p_{it} = SL]$	-0.0935	-0.0045
$I[Party_i = D] * I[Dist_i = Con] * I[p_{it} = L]$	-2.2455	-0.0090
$I[Party_i = D] * I[Dist_i = Lib] * I[p_{it} = H]$	-0.0048	-0.2200
$I[Party_i = D] * I[Dist_i = Lib] * I[p_{it} = SH]$	-0.0014	-0.2078
$I[Party_i = D] * I[Dist_i = Lib] * I[p_{it} = SL]$	0.0992	0.0535
$I[Party_i = D] * I[Dist_i = Lib] * I[p_{it} = L]$	0.1529	0.0602
$I[Party_i = R] * I[Dist_i = Con] * I[p_{it} = H]$	-0.8978	0.5616
$I[Party_i = R] * I[Dist_i = Con] * I[p_{it} = SH]$	-0.2300	0.0074
$I[Party_i = R] * I[Dist_i = Con] * I[p_{it} = SL]$	-0.0237	-0.0045
$I[Party_i = R] * I[Dist_i = Con] * I[p_{it} = L]$	-2.4346	-0.0090
$I[Party_i = R] * I[Dist_i = Lib] * I[p_{it} = H]$	-0.3172	-0.2200
$I[Party_i = R] * I[Dist_i = Lib] * I[p_{it} = SH]$	-0.3120	-0.2078
$I[Party_i = R] * I[Dist_i = Lib] * I[p_{it} = SL]$	0.0016	0.0535
$I[Party_i = R] * I[Dist_i = Lib] * I[p_{it} = L]$	0.4901	0.0602
$Noncrime_i$	0.3220	-0.3522
$I[Etype_i = G]$	3.0802	1.3513
$Age_{it}$	0.0284	-0.0124
$Tenure_{it}$	-0.0286	-0.0971
$I[SOD = 1] * I[Party_i = D]$	0.1743	-0.4110
$I[SOD = 2] * I[Party_i = D]$	0.2512	0.2831
$I[SOD = 3] * I[Party_i = D]$	0.9546	-0.1033
$I[SOD = 1] * I[Party_i = R]$	0.3369	0.1996
$I[SOD = 3] * I[Party_i = R]$	-1.3879	-0.4810

## C Details of Data

In this section, we provide additional details of our data that were not described in Section 3.

## C.1 Exit Decisions

As described in our model, a judge makes an exit decision at the end of each period. In our data, we have 1541 observations of exit decisions and other modes of exit. We show the overall distribution in two different situations : (a) when the seat is not up for reelection (i.e., when a judge is in the first period of a term), and (b) when the seat is up for reelection (when a judge is in the second period of a term). The two modes of exit - death and promotion - in the table are not counted as voluntary exit in our estimation.

Table 17: Exit decisions and other modes of termination : When seat is *not* up for reelection

	Appointed		Elected	
	Frequency	Proportion(%)	Frequency	Proportion(%)
Voluntary Exit	18	4.49	9	2.42
Staying	377	94.01	358	96.24
Death	0	0.00	1	0.27
Promotion	6	1.50	4	1.08

Table 18: Exit decisions and other modes of termination : When seat is up for reelection

	Appointed		Elected	
	Frequency	Proportion(%)	Frequency	Proportion(%)
Voluntary Exit	13	3.00	28	8.38
Running	420	96.77	302	90.42
Death	0	0.00	2	0.60
Promotion	1	0.23	2	0.60

## C.2 Political Climate

As stated in the model, the political climate can be one of the three states - ‘favorable to Republican’, ‘neutral’, and ‘favorable to Democrat’. The relationship between the classification of the political climate and the district-level Democratic vote share in the presidential election years is described in Table 19. The 248 observations in Table 19 are from 8 presidential elections and 31 judicial districts in Kansas from 1976 to 2004. The table shows asymmetry of classification, yielding relatively small frequencies of the state

Table 19: Classification of Political Climate : presidential election years

Political Climate	Frequency	Normalized Democratic Vote Share (%)			
		mean	std. dev.	minimum	maximum
favorable to Republican	85	30.0	3.9	18.4	33.3
neutral	117	39.7	3.6	33.5	45.6
favorable to Democrat	46	52.9	6.9	46.1	72.8

‘favorable to Democrat’. Since the distribution of district-level Democratic vote share is right-skewed, equally dividing three states based on frequencies would yield disproportionately long interval of vote share getting classified as the state ‘favorable to Democrat’. The political climate variable not only means the ‘relative’ preference of voters, but also has meaning in terms of absolute level of vote share. And, the classification in Table 19 is the balanced way of classification considering the overall shape of the vote share distribution. The classification of political climate in gubernatorial election years is summarized

Table 20: Classification of Political Climate : gubernatorial election years

Political Climate	Frequency	Normalized Democratic Vote Share (%)			
		mean	std. dev.	minimum	maximum
favorable to Republican	108	33.6	9.3	16.2	46.5
neutral	102	52.1	3.1	46.5	57.0
favorable to Democrat	38	63.7	6.7	57.1	80.6

in Table 20. The 248 observations in the table is based on 8 gubernatorial elections and 31 judicial districts in Kansas from 1978 to 2006. The rationale behind the classification based on gubernatorial election years is similar to the one for presidential election years. Next, we summarize the relative frequency of the political climates that judges face in

Table 21: Relative Frequency of Political Climate that Judges face (%)

Political Climate	Appointed		Elected		Overall
	Conservative	Liberal	Conservative	Liberal	
favorable to Republican	41.70	17.51	60.20	16.83	30.05
neutral	50.87	33.95	38.80	57.23	47.24
favorable to Democrat	7.43	48.54	1.00	25.94	22.71

conservative and liberal districts under the two systems, in Table 21.

### C.3 Raw Sentencing Data

As described in Section A in the appendix, two key variables - defendants' criminal history and severity level of primary offense - determine the minimum, standard, and maximum jail time. We summarize the overall distribution of the two key variables in the raw sentencing data in Table 22 and Table 23. In Table 24, we summarize the severity level

Table 22: Relative Frequency of the Severity Level

Severity Level	Relative Frequency (%)
Level I	1.18
Level II	0.75
Level III	4.30
Level IV	1.21
Level V	7.08
Level VI	2.08
Level VII	20.18
Level VIII	15.37
Level IX	37.57
Level X	10.27

Table 23: Relative Frequency of Defendants' Criminal History

Category	Relative Frequency (%)
A (3+ person felonies)	5.05
B (2 person felonies)	6.58
C (1 person, 1 non-person felony)	11.63
D (1 person felony)	5.82
E (3+ non-person felonies)	13.10
F (2 non-person felonies)	6.87
G (1 non-person felony)	12.11
H (2+ misdemeanor)	10.96
I (1 misdemeanor, no record)	27.87

classification of important crimes. A complete manual for severity level classification of criminal offenses is available at <http://www.accesskansas.org/ksc/2007desk.shtml>.

Table 24: Severity Level Classification of Selected Offenses

Offense	Severity Level
<b>HOMICIDE</b>	
murder in the first degree, attempt	I
murder in the second degree (intentional)	I
murder in the second degree (reckless)	II
voluntary manslaughter	III
involuntary manslaughter in the commission of dui	IV
involuntary manslaughter	V
<b>KIDNAPPING</b>	
aggravated kidnapping	I
kidnapping	III
<b>BATTERY</b>	
aggravated battery - intentional, great bodily harm	IV
aggravated battery- reckless, great bodily harm	V
aggravated sexual battery	V
aggravated battery - intentional bodily harm	VII
<b>ROBBERY</b>	
aggravated Robbery	III
robbery	V
<b>BURGLARY</b>	
aggravated burglary	V
burglary	VII
<b>SEX CRIME</b>	
rape	I
aggravated criminal sodomy with a child	II
aggravated indecent liberties	III

## D Parameter Estimates

In this section, we report the parameter estimates that are not in Section 5. The estimates related to the reelection probability are separately reported in Section B.3.

In Table 25, we report three different groups of parameters. The first group of parameters consists of the payoff that judges get from the leisure and the payoff from non-crime seat (described in Footnote 17). The second group is the scale parameters of the type I extreme value distribution of taste shocks. The third group is related to the post-exit income. In Table 26, we report the estimated distribution of the electability type.

Table 25: Parameter Estimates

Parameter	Notation	Estimate
payoff : leisure	$\alpha_L$	\$85767
payoff : non-crime seat	$\alpha_{NC}$	-\$43828
scale : policy	$\sigma_Z$	\$16421
scale : running	$\sigma_R$	\$135088
scale : staying	$\sigma_S$	\$142555
scale : post-exit	$\sigma_E$	\$167218
wage : constant	$\beta_0$	10.0550
wage : Expriv1	$\beta_1$	0.9154
wage : Expriv2	$\beta_2$	0.9627
wage : Expriv3	$\beta_3$	1.1214
wage : std. dev	$\sigma_W$	0.2993

Table 26: Estimated Electability Type Distribution (%)

	Bad Type	Good Type
Appointed	36.5	63.5
Elected	68.4	31.6