

SUPREME SPLIT:
COMPARING THE ROBERTS AND REHNQUIST COURTS' IDEOLOGICAL
PREFERENCES TOWARD BUSINESS ACCOUNTING FOR CASE SELECTION

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Abstract. There is growing concern that Supreme Court rulings are increasingly being made along partisan lines. We develop a new methodology that jointly analyzes justices' selection of cases to hear and their rulings, while allowing for justice preference heterogeneity, to estimate the effects of their ideology on business case rulings in the Roberts and Rehnquist Courts. In contrast to prior approaches that mute justices' ideological preferences by not controlling for case selection, we find strong evidence of growing politicization and polarization on the Supreme Court. We briefly discuss explanations for, consequences of, and possible reforms to mitigate this worrisome trend.

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1. Introduction

The Supreme Court of the United States (SCOTUS) has ultimate jurisdiction over federal laws and plays a central role in determining the nation's economic and social policies. In contrast to Congress and the Executive Office of the President, the Supreme Court is generally thought to be an independent and apolitical body because justices are appointed for life, are not ambitious for higher office, decide which cases they wish to hear, and are not subject to reversal by a higher court (Segal and Spaeth (2002)). This perceived aloofness from politics has bolstered public trust in the Court, and public opinion polls have repeatedly shown that, of the three branches of government, Americans hold the judicial branch in the highest regard.

But perceptions of the Supreme Court are changing. Chemerinsky (2014), for instance, has characterized the justices in the two most recent courts—the Roberts Court, named after Chief Justice John G. Roberts, and the Rehnquist Court, named after Chief Justice William H. Rehnquist—as politicians in fine robes, who simply reflect the views of the President who appointed them. Although flashy, such claims are not without evidence. Legal scholars, for example, have pointed to the recent and precipitous rise in split-decision rulings as an indicator of the Court's growing polarization and politicization.¹ Speculation that political ideology is increasingly influencing Court rulings finds further support in the fact that the Roberts Court has made more major decisions along partisan lines than have previous courts.² With the recent

¹ For example, from 1801 to 1940, less than 2 percent of SCOTUS total rulings were resolved by 5-to-4 decisions. In contrast, the Roberts Court has decided 21.5 percent of its cases by a 5-to-4 ruling, the highest share of any court, and the Rehnquist Court has decided 20.5 percent of its cases by that margin. The figures are reported in David Paul Kuhn, "The Incredible Polarization and Politicization of the Supreme Court," *The Atlantic*, June 29, 2012.

² For example, between 1937 and 2010, Devins and Baum (2014) report that one major case (in 1985) broke along party lines. But since 2010, five major decisions have been decided in that manner.

passing of Justice Antonin Scalia, there is concern that the Court will be deadlocked on a number of major cases until a ninth justice is appointed and confirmed. Finally, Rishikof, Messenger, and Jo (2009) show that Justices' recent hiring of law clerks is also occurring much more along party lines than in the past. Because those clerks play critical roles in selecting the petitions that the Justices agree to hear and in drafting Justice opinions, the authors argue that such partisan hiring practices have contributed to the Court's polarized environment.³

While the circumstantial evidence presented above alludes to the growing politicization of the Court, justice ideology is likely to be a potentially important influence on to SCOTUS outcomes because SCOTUS justices are appointed for life and because their decisions are not subject to reversal by a higher court. As a result, those policymakers enjoy greater freedom than elected officials to allow their ideological preferences to influence their decisions. Moreover, Posner (2008) argues that because Justices do not share a commitment to a logical premise for making a decision (for example, cost-benefit analysis); they are ideological because they cannot be anything else.

On the other hand, Rosen (2013) argues that, if justices based their decisions solely on their ideologies, they could damage their reputations as fair justices, discredit the President who appointed them, and possibly undermine the Court in the eyes of the public, which could lead to

³ The growing polarity of the Supreme Court is further suggested by Peppers and Giles' (2012) findings that the justices' attendance at the President's State of the Union (SOTU) address has declined in recent decades and that a justice is more likely to attend the SOTU address if he or she was appointed by the President giving the address. According to the authors, from 1965 (President Johnson's second address) to 1980 (President Carter's last address), 84 percent of the justices attended the SOTU address on average. From 1982 through 1999, the justices' average attendance declined to 56 percent. And since 2000, only 32 percent of the justices attended the address, with Justice Clarence Thomas claiming that "it has become so partisan and it's very uncomfortable for a judge to sit there," and Justice Antonin Scalia describing the annual address as "cheerleading sessions."

certain actions, such as term limits or even retention elections. It seems likely, then, that ideology is an important, but not the only, factor shaping SCOTUS decision-making.

While the view that ideology influences SCOTUS outcomes is compelling, it is still an empirical question as to whether stronger ideological preferences are making the Roberts Court more polarized than previous courts. Chief Justice Roberts has, himself, acknowledged the policy importance of this question, claiming that, if the Court were to adopt the extreme partisanship that currently characterizes the other branches of the federal government, it would seriously damage SCOTUS's reputation among the public, as well as jeopardize the judicial nomination and confirmation process. Accordingly, Roberts has sought to assuage concerns that the Court is functioning as a political entity by publicly pledging to embrace Chief Justice John Marshall's conception of the judicial branch as a nonpartisan steward in a polarized democracy.⁴

Legal scholars who have attempted to determine systematically whether the Supreme Court is becoming more polarized under Chief Justice Roberts are divided. For example, Chemerinsky's (2008) assessment of the Roberts Court after three years bemoans the new justices who have forged a "solid conservative voting majority" and concludes that the Court is exceedingly pro-business, while Adler (2008) disagrees and says the Court is only "moderately more conservative than it had been immediately before" and is not notably pro-business. Adler points out that the smaller number of case petitions that the Roberts Court accepted during the period suggests caution should be exercised about making sweeping judgments about its ideological trajectory. Lee Epstein, Landes, and Posner (2013a) performed a statistical analysis of business cases and concluded that the conservatives on the Roberts Court are extremely pro-business and that the liberals are only

⁴ Justice Roberts' concerns about polarization and partisanship in the Supreme Court are summarized by Rosen (2013) and by Professor Geoffrey Stone of the University of Chicago Law School in "Our Politically Polarized Supreme Court?," Huffington Post Blog, September 24, 2014.

moderately liberal. Richard Epstein (2013) challenged their finding, stressing that the authors do not control for potential selectivity bias in the case petitions that the Roberts Court accepts.

In this paper, we explore the influences of justice ideology in the Roberts Court by analyzing the determinants of its rulings and the Rehnquist Court's rulings on business cases. As noted by Epstein, Landes, and Posner (2013a), business cases are useful to analyze because (1) justices tend to have well-defined preferences toward business and the policies favored by most business interests, and (2) justice political ideology (liberal or conservative) can serve as a good proxy for those preferences, with conservative justices being more likely than liberal ones to make decisions that favor business firms. Importantly, we isolate the effects of political ideology on judicial rulings by developing a joint mixed-logit model that accounts for both justice preference heterogeneity and the selection of petitions by SCOTUS.

To the best of our knowledge, this is the first application of a new methodology to correct for selectivity bias when (1) discrete choice probability models are used to characterize both the selectivity behavior (petition selection) and the outcome of interest (justices' individual rulings for or against a business entity), and (2) the selection error is correlated with the random coefficients in the outcome model. Although it has long been argued that failure to control for case selectivity can bias analyses of court outcomes (Priest and Klein (1984)), previous empirical studies of SCOTUS rulings have not formally incorporated case selection decisions into an econometric analysis.⁵ As a result, this paper contributes to the broader study of SCOTUS decision-making by addressing a potentially critical, but largely ignored, source of estimation bias. In particular, a

⁵ For example, see: Epstein, Landes, and Posner (2013a, b); prediction models of Supreme Court outcomes developed by Ruger et al. (2004) and Katz, Bommarito, and Blackman (2014); and examinations of changes in individual justices' ideological beliefs by Iaryczower and Shum (2012) and Martin and Quinn (2007).

Court with strong ideological preferences may mask or exacerbate those preferences by agreeing to hear more or fewer cases of a certain type (e.g., politically divisive cases). Our methodology should also be of general interest, given the ubiquity of selection problems and discrete outcomes that economists study. For example, instead of the classic Heckman selection problem of the discrete selection choice of employment and a continuous wage outcome, one can think of the selection problem of employment and a discrete outcome of earnings above the minimum wage.

We find that justices' ideologies have a statistically and quantitatively important influence on their rulings on business cases. Moreover, when we compare justices' ideological preferences in the Rehnquist Court with those in the Roberts Court and we implement our methodology to control for case selection, we find strong evidence of growing politicization and polarity on the Supreme Court. This finding holds even when we confine our analyses to those justices who have served on both Courts. In contrast, we obtain much weaker evidence on growing politicization and polarity if we do not control for case selection, indicating that the Roberts Court's justices mute their ideological preferences through the petition selection process. Thus, Supreme Court justices have not moderated their ideological preferences over the past two decades; instead, those preferences appear to have grown stronger and more divisive. We conclude by briefly discussing the explanations for and adverse consequences of the Court's growing polarity, as well as possible reforms to mitigate this worrisome trend.

2. An Overview of the Determinants of Petition Selection and Case Outcomes

Two extreme theories about judges' behavior exist (Edwards and Livermore (2009)). The "legalist" theory asserts that judges mechanically apply the law to the facts, while the "political

science” theory argues that a judge’s political ideology has a predominant influence on his or her rulings.

Epstein, Landes, and Posner (2013b) suggest a middle ground wherein ideology is a component in judicial behavior that increases in influence as a judge moves up the judicial hierarchy and gains more independence. In this framework, however, ideology does not rule out other possible influences on judges’ rulings. We draw on this third approach to model two SCOTUS decision-making processes: (1) the Court’s selection of petitions to hear (i.e., the decision to grant a petition a *writ of certiorari*, or “granting cert”); and (2) justice rulings on business-related cases that are heard by SCOTUS (i.e., case-outcome votes). We provide an overview of the relevant influences and their measurement on those two decision junctures.

Case-Outcomes Model

Data on U.S. Supreme Court business case outcomes during the Rehnquist Court and the Roberts Court up through 2011 are available in Epstein, Landes, and Posner’s (2013a) Business Litigant Dataset (BLD). This dataset consists of all cases that were orally argued before the U.S. Supreme Court and that involved a business entity as either a respondent or a petitioner, but not both. Because BLD was constructed using Harold Spaeth’s well-known U.S. Supreme Court Database, it contains detailed information on the legal characteristics, history, and outcomes of Supreme Court disputes, as well as data on the votes of each Justice (Spaeth et al. (2014)). Due to petition data constraints that are discussed in greater detail below, we limit our case outcomes analyses to the 198 business cases that were submitted to and heard by SCOTUS between 1996 and 2011.

Following Epstein, Landes, and Posner (2013a), we classify any vote in favor of the business litigant as “pro-business” and any vote in favor of the non-business party as “anti-

business.” Although it is possible for one company to win at the expense of the interests of the larger business community, this classification scheme is superior to alternative definitions of a “business win” because it is more transparent, relies less on the subjective coding judgments of the researcher, and allows for the analysis of a wider range of business-related cases.⁶

We estimate separate models for the Roberts and Rehnquist courts to determine the distinct ideological preferences of the justices on those courts. For each court, we initially follow Epstein, Landes, and Posner (2013a) by specifying the probability of a pro-business vote as a function of: (a) an indicator for each justice serving on the court, which captures the ideological preferences of that justice;⁷ (b) an indicator of whether the lower court from which the case was appealed reached a pro-business ruling; (c) a series of dummy variables indicating whether the Solicitor General filed an *amicus* brief on behalf of the business litigant or the non-business litigant; (d) an indicator of whether the federal government was the non-business party in the case; and (e) an indicator variable of whether the substantive issues of a case fall within the scope of Spaeth’s “economic activity” category. In an alternative set of specifications, we replace the individual justice

⁶ One popular definition of a business win focuses on cases that have been coded in the Spaeth Database as being related to “economic activity,” and then uses Spaeth’s ideological classifications of a case as either “conservative” or “liberal” as a proxy for pro- and anti-business decisions, respectively. Epstein, Landes, and Posner (2013a), however, show that this definition excludes a substantial number of cases that do not fall into the “economic activity” category, but nonetheless involved business entities. Even more telling, the authors find that many of those excluded cases were accompanied by an *amicus curiae* brief filed by the Chamber of Commerce, a sure indicator of the business relevance of a case. In addition, Epstein, Landes, and Posner call into question the accuracy of Spaeth’s ideological classification of cases when they conduct their own reanalysis of 147 business-related cases. Strikingly, in about 39 percent of the 147 cases reviewed, the authors disagreed with Spaeth’s ideological coding. Rates of disagreement were even higher for businesses cases that did not fall within the “economic activity” classification.

⁷ Note the dummy captures ideological preferences and not just disagreement among justices because we control for several other factors on case decisions and because our main analyses explore systematic differences among justices’ preferences by assessing them relative to the chief justice’s preference.

indicators with a single ideology binary measure that identifies justices as either Conservative\Moderate or Liberal according to Epstein, Landes, and Posner's (2013b) classification system, which they explain in detail in chapter 2 of their 2013b book. Importantly, their methodology determines justices' ideologies based on their actual votes in cases, as opposed to the ideology of the President who appointed them. In addition, the ideological status of a justice does not change over time.

Finally, as robustness checks, we expanded the specification of the case-outcomes model to include: (f) eleven topical dummies that categorize petitions to the Supreme Court according to the main legal questions and substantive matters of the dispute, which can be used to differentiate between the subject matter of the business cases heard by the Court;⁸ and (g) a series of lower-court dummies, which are described in greater detail below.

⁸ We use Bloomberg BNA's Supreme Court Today's dataset to obtain petitions to the Supreme Court for each year of our sample. That database categorizes petitions according to 64 different legal categories. Due to sample size issues, we aggregated those fine-grained classifications into eleven broad topic categories, namely: (1) Criminal law, which contains cases related to criminal law, prisons, and racketeering; (2) Civil rights law, which is composed of Bloomberg's civil rights, education, election, and employment discrimination topics; (3) Regulatory law, which contains petitions related to agriculture, antitrust, energy, environment, health care, international trade, securities, utilities, telecommunications, and transportation; (4) Consumer and worker safety law, which contains Bloomberg's consumer credit, consumer protection, deceptive trade, employee benefits, mining, occupational safety, product liability, unfair trade practices, employment/labor, attorney ethnics, and torts topics; (5) Private/state business law, which contains petitions related to accounting, banking/finance, contracts, corporate and business law, insurance, partnerships, arbitration, alcoholic beverages, and gambling; (6) Intellectual property law, which is composed of Bloomberg's copyrights, patents, and trademarks topics; (7) Government authority issues, which contains petitions related to administrative law, agency law, international law, takings, appellate procedure, civil procedure, congressional operations, evidence, judicial appointments, and constitutional law; (8) Technology issues, which contains petitions related to cyber law, media, and privacy; (9) Other government issues, which is composed of Bloomberg's bankruptcy, government contracts, immigration, infrastructure, maritime, military, Native American, postal services, social security, veterans, and freedom of information topics; (10) Tax law, which is composed only of Bloomberg's tax topic; and (11) Private non-business, which includes Bloomberg's family law, trusts and estates, and nonprofit organizations topics.

Petition Selection Model

In principle, there are two selection decisions that may be relevant for our analysis: The SCOTUS justices' selection of cases from the pool of lower court appeals and the selectivity behavior of litigants to include their case in the pool of SCOTUS petitions. Assembling a data set and estimating a model of the petition decisions by litigants would be a very formidable task of questionable value to our analysis given: (1) all litigants who lose at lower courts have the right to petition the Supreme Court to hear their case; and (2) many business litigants take advantage of this right, especially because the cost to those litigants of submitting a petition is not high. Moreover, we are not aware of any theoretical or empirical evidence that there is any systematic bias in the cases that business litigants choose to appeal, and, given that we are comparing the Roberts Court (2005-2011) to the latter half of the Rehnquist Courts (1996-2005), we limit the possibility that differences in the types of cases that make it into the SCOTUS pool of petitions are driving our results. In particular, it seems highly unlikely that the types of cases being processed by the lower courts during the end of the Rehnquist Court are categorically different than those circulating through the lower courts during the Roberts Court.

Thus, we focus on estimating the determinants of case selection by the Roberts and Rehnquist Courts using the online Bloomberg BNA Supreme Court Today dataset.⁹ The Bloomberg database contains a myriad of information on virtually all paid cert. petitions filed with the Supreme Court between 1996 and 2011.¹⁰ However, because the format of the database is not

⁹ <http://www.bna.com/supreme-court-today-p5946/>

¹⁰ Paid cert. petitions are also called non-pauper petitions. No one has collected data on pauper (non-paid) petitions, which represent only about 10% of the Supreme Court's docket and tend to be easily resolved by the justices (Posner (2008)). Note that some early-1996 paid cert. petitions

conducive to statistical analysis and because data must be downloaded separately for each individual petition, gathering information on the more than 27,000 petitions submitted during this time period proved to be logistically infeasible. We therefore constructed a sample of 2768 petitions that were randomly selected from the Bloomberg database.¹¹ In addition, the 198 cases in our Business Litigant Database that are used to estimate the case-outcomes model can be treated as a choice-based sample in estimating the petition-selection model. Although the petition-selection model can be estimated using the random sample of 2768 petitions, combining the random sample with the choice-based sample can improve the efficiency of the parameter estimates. Hence, we estimate our model with the random sample and then combine it with the choice-based sample as a robustness check.

We are not aware of a previous Supreme Court petition selection model that explains how the justices select petitions, although it is known that a petition needs four justice votes to be selected, the court typically hears about 1 percent of the nearly 9,000 appeals that they receive each year, and that it is customary for the court's decision on whether to hear a case does not indicate how individual justices voted.¹² Thus, we reviewed the extant literature on the factors

are also missing from the Bloomberg database. The database does, however, contain the full population of non-pauper SCOTUS petitions submitted in all post-1996 years.

¹¹ To construct our random sample of Bloomberg petitions, we first sorted eligible petitions by the date on which the SCOTUS decided to hear (or not hear) the petition. Only petitions that were either granted or denied a hearing with SCOTUS were eligible for selection. Then, for each year, we selected every tenth petition to include in our sample, meaning that, on average, we sampled between 100 and 300 petitions for each SCOTUS term. Note that the 2768 randomly selected petitions and the 198 BLD petitions are not mutually exclusive because some randomly selected petitions were also included in the Business Litigant Dataset.

¹² Jeffrey L. Fisher, "The Supreme Court's Secret Power," *New York Times*, September 25, 2015 argues that justices' votes on each petition should be announced to increase transparency on why justices pick the cases they do. The absence of this voting information makes it difficult for us to assess whether justices engage in "defensive denials" or other forms of strategic behavior (Corday and Corday (2008)).

that are most relevant for explaining the Justices' case selection decisions and specified the probability that a petition is granted a hearing with the Supreme Court as a function of: (a) thirteen lower court indicators and a reference category that identify the court system whose decision is being appealed;¹³ (b) a lawyer quality dummy that indicates whether any of the lawyers filing the petition are "top Supreme Court advocates," which we define to be litigators who have argued at least ten cases before the Supreme Court by 2010;¹⁴ (c) a second lawyer performance dummy that identifies top Supreme Court advocates who were working as the U.S. Solicitor General when the federal government filed the petition; (d) an indicator for whether the Court invited the Solicitor General to submit a brief analyzing the petition and expressing the views of the United States;¹⁵ (e) a series of Court-calendar dummies indicating whether the decision to grant or deny a petition was made during the Court's summer recess, the May or June lists, or one of the seven argument

¹³ More specifically, we include separate dummies for (a) each of the eleven circuit courts of appeals; (b) the District of Columbia circuit court (indicated in the estimations as lower court dummy12); and (c) the Federal Patent Court (indicated in the estimations as lower court dummy 13). The reference category includes petitions from state and lower district courts, as well as any court not explicitly identified by our set of indicator variables.

¹⁴ Biskupic, Roberts, and Shiffman (2012) and Lazarus (2008) argue that SCOTUS grants petitions filed by certain top advocate lawyers at a significantly higher rate than they grant petitions filed by other lawyers. While the Bloomberg database provides the names of the lawyers filing a petition, we relied upon data published by Bhatia (2012) to identify top Supreme Court Advocates. Specifically, Bhatia ranks modern lawyers according to the number of SCOTUS cases they have argued between 2000 and 2010, as well as provides lifetime numbers of Supreme Court appearances for each of those lawyers. Taken together, the Bloomberg and Bhatia data allowed us to identify petitions filed by lawyers who, as of 2010, had argued at least 10 cases before the Supreme Court.

¹⁵ Thompson and Wachtell (2009) discuss the close relationship that solicitor generals have with the Supreme Court and the Court's requests for their views on petitions.

sessions;¹⁶ and (f) a count variable measuring the size of the Supreme Court's docket in a given year.¹⁷

3. Econometric Model

We now develop a new econometric model to estimate the effects of the ideological preferences of the Roberts and Rehnquist Court justices on the outcomes of business-related cases, accounting for the non-random selection of petitions. We let g index the two courts, with $g = 1$ for the Rehnquist Court and $g = 2$ for the Roberts Court. For a given case i before court g , there are up to nine votes by the justices on that court. We let y_{ij} denote the vote of justice j on case i , with y_{ij} equal to 1 if the vote is pro-business and 0 otherwise. Thus the justice case outcomes vote under court g is given by the following binary response model:

$$y_{ij} = I(y_{ij}^* \equiv \alpha + \gamma_i^g D_j^L + \omega_i^g D_j^C + \mathbf{X}_i \mathbf{B}^g + e_{ij}^g > 0), \quad (1)$$

¹⁶ Corday and Corday (2004) discuss how the volume of petitions affects the likelihood of whether the Supreme Court will agree to hear a case. The Supreme Court term begins the first Monday in October and consists of seven argument sessions during which the Justices hear cases and deliver opinions; the May and June lists during which the Court sits only to announce orders and opinions; and the summer recess during which the Court's only duty is to review newly-submitted petitions and make preparations for the fall argument sessions. Following Corday and Corday (2004), petition decisions announced in July, August, September, and the first Monday of October were assigned to the summer recess; subsequent petition decisions made in October (but after the first Monday) were assigned to the October session, the first of the seven argument sessions. Month dummies were then constructed to identify the six remaining argument sessions (November through April) and the May and June lists.

¹⁷ Annual docket size was measured as the total number of petitions filed during the year plus the total number of cases remaining on the docket from the previous year. Note that these counts include both the non-pauper petitions recorded in the Bloomberg dataset and the much smaller number of pauper cases. Data on docket size come from the Federal Judicial Center (http://www.fjc.gov/history/caseload.nsf/page/caseloads_Sup_Ct_totals).

where $I(\cdot)$ is an indicator function that is equal to 1 if the inside argument is true and is equal to zero otherwise; D_j^L is a liberal (or moderate) L ideology and D_j^C is a conservative C ideology dummy for justice j ; and \mathbf{X}_i is a vector of exogenous influences on the case outcome discussed previously, \mathbf{B} is a vector of parameters, and e is an error term.¹⁸

The justices' ideological preferences toward a case, captured by the parameters γ_i^g and ω_i^g , would be expected to vary across cases because cases have different characteristics, many of which are unobserved. Given that there are at most 9 votes for a case, it is infeasible for us to use fixed effects by interacting case dummies with ideological dummies to control for the variation in the ideological preferences across cases. We therefore adopt a random-effects specification and model γ_i^g and ω_i^g as two correlated random coefficients; as noted later, the joint distribution of the two random coefficients is allowed to be correlated with the case selection process because unobserved case characteristics may affect both ideological preferences and case selection.

Because we include an intercept α in the specification, the mean of ω_i^g is normalized to zero and γ_i^g can be written as $\gamma_i^g = \bar{\gamma}^g + \eta_i^g$, where η_i^g denotes a random term with zero mean. Given this specification, the estimates of $\bar{\gamma}^g$ measure for a given court g the average pro-business bias of liberal or moderate justices compared with the pro-business bias of conservative justices.

Selectivity Bias

A probit or logit regression to estimate equation (1) suffers from sample-selection bias because estimation is based only on the cases that the Supreme Court agreed to hear and ignores

¹⁸ We initially estimate separate dummies each justice and we then perform estimations where we aggregate and specify liberal/moderate and conservative ideology dummies for each justice. Our derivation also holds for the first approach.

the information provided by the cases that the Court declined to hear. Let s_i denote the binary indicator for case selection, which is equal to 1 if case i is granted a hearing by the Supreme Court and 0 otherwise. Thus, the case selection model under court g is specified as:

$$s_i = I(s_i^* \equiv \mathbf{Z}_i \boldsymbol{\delta}^g + v_i^g > 0), \quad (2)$$

where \mathbf{Z}_i is a vector of observed exogenous influences on case selection discussed previously (some of which are not included in \mathbf{X}_i), $\boldsymbol{\delta}$ is a vector of parameters, and v is an error term.

Formally, the selectivity issue arises because we can observe a case outcome y_{ij} only when $s_i = 1$:

$$\Pr(y_{ij} = 1 | s_i = 1) = \Pr(y_{ij}^* > 0 | s_i^* > 0). \quad (3)$$

The random coefficients in equation (1), η_i^g and ω_i^g , are likely to be correlated with the error term, v_i^g , because unobserved case characteristics that affect case selection also affect how justices' preferences are revealed in the merits-ruling stage of the process. Thus maximizing the log-likelihood of the unconditional probability $\Pr(y_{ij}^* > 0)$ as a probit or logit estimation with random coefficients leads to inconsistent parameter estimates.

If we assume joint normality of η_i^g , ω_i^g and v_i^g , such that

$$\boldsymbol{\Gamma}_i \equiv (\eta_i^g, \omega_i^g)' = \boldsymbol{\theta}^g v_i^g + \boldsymbol{\mu}_i^g, \quad (4)$$

where $\boldsymbol{\mu}_i^g \sim N(0, \Sigma_{2 \times 2})$ and $v_i^g \sim N(0, 1)$, and if the latent variable y_{ij}^* is observable, we can specify the conditional expectation function

$$E(y_{ij}^* | s_i = 1) = \alpha + \bar{\gamma}^g D_j^L + \mathbf{X}_i \mathbf{B}^g + \mathbf{D}_j \times \boldsymbol{\theta}^g \times E(v_i | v_i > -\mathbf{Z}_i \boldsymbol{\delta}^g), \quad (5)$$

where $\mathbf{D}_j = (D_j^L, D_j^C)$. It would appear that equation (5) can be estimated to obtain consistent parameter estimates by the usual two-step control-function type approach (Heckman (1976)): first estimate a probit selection model to obtain the inverse-mills ratio and then regress y_{ij}^* on the explanatory variables along with interactions of the inverse-mills ratio and the ideological dummies to control for the unobserved influences on selection. However, that approach cannot be applied here because we observe only the binary case outcome y_{ij} . Given the joint normality assumption in equation (4) and the condition given by equation (3), we have

$$\begin{aligned}
& P(y_{ij} = 1 | s_i = 1) \\
&= \int \left[\int \int \int I(e_{ij}^g > -\gamma^g D_j^L - \mathbf{X}_i \mathbf{B}^g - (\mathbf{D}_j v_i^g) \boldsymbol{\theta}^g - \mathbf{D}_j \mathbf{u}_i^g) f(\mathbf{u}_i^g) d\mathbf{u}_i^g \right] f(v_i^g | v_i^g > -\mathbf{Z}_i \boldsymbol{\delta}^g) dv_i^g \left] de_{ij}^g \quad (6) \\
&\neq \int \left[\int \int I(e_{ij}^g > -\gamma^g D_j^L - \mathbf{X}_i \mathbf{B}^g - (\mathbf{D}_j E(v_i^g | v_i^g > -\mathbf{Z}_i \boldsymbol{\delta}^g)) \boldsymbol{\theta}^g - \mathbf{D}_j \mathbf{u}_i^g) f(\mathbf{u}_i^g) d\mathbf{u}_i^g \right] de_{ij}^g
\end{aligned}$$

The last inequality is the result of Jensen's Inequality because the indicator function is nonlinear. Since we cannot use the standard two-step approach to control for selectivity bias, we instead derive the joint distribution of the endogenous variables $P(\mathbf{y}_i, s_i)$, where $\mathbf{y}_i = (y_{i1}, \dots, y_{i9})'$, and we estimate the parameters in equation (1) by Maximum Simulated Likelihood Estimation (MSLE). This appears to be the first application, to the best of our knowledge, of a new methodology to correct for selectivity bias when both the selectivity and outcome equations are discrete. We extend this application to allow the selection error to be correlated with the random coefficients in the outcome model.

We identify the case outcome model with selectivity by assuming the distribution of η_i^g , ω_i^g and v_i^g is joint normal.¹⁹ Dropping the court superscript to simplify the exposition yields:

$$(v_i, \omega_i, \eta_i)' \sim MVN\left(\mathbf{0}, \begin{bmatrix} 1 & \rho_1\sigma_\omega & \rho_2\sigma_\eta \\ \rho_1\sigma_\omega & \sigma_\omega^2 & \rho_3\sigma_\omega\sigma_\eta \\ \rho_2\sigma_\eta & \rho_3\sigma_\omega\sigma_\eta & \sigma_\eta^2 \end{bmatrix}\right) = MVN\left(\mathbf{0}, \begin{bmatrix} 1 & \mathbf{\Omega}_{12} \\ \mathbf{\Omega}'_{12} & \mathbf{\Omega}_{22} \end{bmatrix}\right) = MVN(\mathbf{0}, \mathbf{\Omega});$$

(7)

e_{ij} is assumed to have a logistic distribution with variance normalized to $\pi^2/3$.

To summarize, then, our econometric model consists of: two binary response models, a binary probit model of petition selection and a binary mixed-logit model of pro-business voting on cases selected by SCOTUS; a cross-model correlation that is represented by equation (7); correlations among different justices' votes on a case that are captured by random individual effects, ω_i and η_i , and their correlation; and justice ideological preferences that influence case outcomes that are allowed to vary, as indicated by equation (7), according to unobserved case characteristics that affect both case selection and case outcomes.

Deriving the Data Likelihood

¹⁹ Heckman and Singer (1984) propose a nonparametric maximum-likelihood approach that uses a discrete type distribution for the random components in an econometric model. Their approach is difficult to apply to our sample selection model with random coefficients because we show in equation (9) below that the data-likelihood of the sample selection model requires knowledge of both the joint distribution and the conditional and marginal distributions of (v_i, ω_i, η_i) . Although we can use a common random component with a discrete type distribution to capture the correlation of (v_i, ω_i, η_i) , it is not possible for us to derive marginal and conditional distributions from such a specification. Thus, assuming joint normality provides a tractable and plausible way to identify the sample selection model.

After dropping the court superscript, we define $\mathbf{W}_i \equiv (\mathbf{X}_i, \mathbf{Z}_i)$ and $\Theta \equiv (\bar{\gamma}, \mathbf{B}, \mathbf{\Omega}, \delta)$. For any case i in the Business Litigation Database, the joint distribution of $\mathbf{y}_i \equiv (y_{i1}, \dots, y_{i9})'$ and s_i can be expressed as

$$P(\mathbf{y}_i, s_i | \mathbf{W}_i, \mathbf{D}_j, \Theta) = P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, \Theta) P(s_i = 1 | \mathbf{Z}_i, \delta). \quad (8)$$

Note, we assume that $P(s_i = 1 | \mathbf{Z}_i, \delta) = \Phi(\mathbf{Z}_i \delta)$, where $\Phi(\cdot)$ indicates the standard normal distribution function.

The conditional probability $P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, \Theta)$ is given by

$$\begin{aligned} P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, \Theta) &= \int_{v_i} P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, v_i, \Theta) f(v_i | s_i = 1) dv_i \\ &= \int_{v_i} P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, v_i, \Theta) f(v_i | v_i > -\mathbf{Z}_i \delta) dv_i \\ &= \int_{v_i} \left(\int_{\Gamma_i} P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \Gamma_i, \mathbf{D}_j, v_i, \Theta) f(\Gamma_i | v_i) d\Gamma_i \right) f(v_i | v_i > -\mathbf{Z}_i \delta) dv_i \quad (9) \\ &= \int_{v_i} \left(\int_{\Gamma_i} \left[\prod_j P(y_{ij} | s_i = 1, \mathbf{W}_i, \Gamma_i, \mathbf{D}_j, v_i, \Theta) \right] f(\Gamma_i | v_i) d\Gamma_i \right) f(v_i | v_i > -\mathbf{Z}_i \delta) dv_i \end{aligned}$$

where given our mixed logit specification, $P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \Gamma_i, \mathbf{D}_j, v_i, \Theta)$ has a simple binary logit functional form. According to the specification (7), $f(\Gamma_i | v_i)$ is a bivariate normal density. The density function $f(v_i | v_i > -\mathbf{Z}_i \delta)$ is a truncated normal that is truncated below $-\mathbf{Z}_i \delta$ (because $s_i = 1$). When sample selection is not correlated with the case outcome equation, the integration in (9) does not depend on v_i because $f(\Gamma_i | v_i) = f(\Gamma_i)$. In that case, the parameters in the case outcome equation can be estimated consistently by maximizing the log of the likelihood function defined in (9).

Estimation

We combine the Business Litigation Database on case outcomes, which is denoted by Ψ_{BLD} , with the Bloomberg data set on case petitions, which is denoted by Ψ_{BNA} , to estimate the parameters in Θ . The log of the data likelihood takes the following form:

$$\ln L(\Theta) = \sum_{i \in \Psi_{BLD}} \ln P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, \Theta) + \sum_{i \in \Psi_{BLD}} \ln \Phi(\mathbf{Z}_i \boldsymbol{\delta}) + \sum_{i' \in \Psi_{BNA}} [I(s_{i'} = 1) \ln \Phi(\mathbf{Z}_{i'} \boldsymbol{\delta}) + I(s_{i'} = 0) \ln(1 - \Phi(\mathbf{Z}_{i'} \boldsymbol{\delta}))] \quad (10)$$

However, as noted, the parameters in the case selection equation can be estimated by an enriched sample that contains both Ψ_{BLD} and Ψ_{BNA} , which oversamples the share of business cases that the Supreme Court selects to hear. We therefore take two approaches to estimation. In the baseline estimations, we use only the Bloomberg random sample to estimate the selection parameters so that the baseline estimator is:

$$\hat{\Theta} \equiv \arg \max_{\Theta} \ln L(\Theta) = \sum_{i \in \Psi_{BLD}} \ln P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, \Theta) + \sum_{i' \in \Psi_{BNA}} [I(s_{i'} = 1) \ln \Phi(\mathbf{Z}_{i'} \boldsymbol{\delta}) + I(s_{i'} = 0) \ln(1 - \Phi(\mathbf{Z}_{i'} \boldsymbol{\delta}))] \quad (11)$$

As a robustness check, we combine the Bloomberg random sample with the choice-based sample that we summarized earlier and use Manski and Lerman's (1977) Weighted Exogenous Sample Maximum Likelihood Estimation (WESML) as applied to joint models by McFadden, Winston, and Boersch-Supan (1985), to estimate the parameters from

$$\tilde{\Theta} \equiv \arg \max_{\Theta} \ln L(\Theta) = \sum_{i \in \Psi_{BLD}} \ln P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, \Theta) + \sum_{i \in \Psi_{BLD}} \varpi_1 \ln \Phi(\mathbf{Z}_i \boldsymbol{\delta}) + \sum_{i' \in \Psi_{BNA}} [I(s_{i'} = 1) \varpi_1 \ln \Phi(\mathbf{Z}_{i'} \boldsymbol{\delta}) + I(s_{i'} = 0) \varpi_0 \ln(1 - \Phi(\mathbf{Z}_{i'} \boldsymbol{\delta}))] \quad (12)$$

where $\varpi_1 = \frac{\% \text{ of cases granted hearing in the Bloomberg Sample}}{\% \text{ of cases granted hearing in the enriched Sample}}$, and ϖ_0 is defined similarly to reweight the cases not selected by the Supreme Court. This estimator yields consistent parameter estimates.²⁰

Estimation of the model requires evaluating the log-likelihood function given by equation (11) or the pseudo-log-likelihood function given by equation (12) at each iteration of the optimization procedure.²¹ In those functions, the conditional probability $P(\mathbf{y}_i | s_i = 1, \mathbf{W}_i, \mathbf{D}_j, \Theta)$, which is given in equation (9), can be evaluated only numerically because the probability involves integrations with respect to both Γ_i given ν_i and ν_i itself. We use Monte-Carlo integration to approximate the probability, where the Monte-Carlo approximation to equation (9) is given by

$$P(\mathbf{y}_i | \mathbf{W}_i, \mathbf{D}_j, \Theta) \approx \frac{1}{R_\nu} \sum_{r_\nu=1}^{R_\nu} \left[\frac{1}{R_\Gamma} \sum_{r_\Gamma=1}^{R_\Gamma} \prod_{j=1}^9 P(\mathbf{y}_{ij} | \mathbf{W}_i, \Gamma_i^{r_\Gamma}(\nu_i^{r_\nu}), \mathbf{D}_j, \Theta) \right] \quad (13)$$

where $\nu_i^{r_\nu}$ represents the r_ν th random draw of ν_i from the truncated normal distribution $TN_{(-Z_i\delta, +\infty)}(0,1)$ and $\Gamma_i^{r_\Gamma}(\nu_i^{r_\nu})$ represents the r_Γ th random draw of Γ_i from the bivariate normal distribution conditional on $\nu_i^{r_\nu} - N(\nu_i^{r_\nu} \times \Omega'_{12}, \Omega_{22} - \Omega'_{12} \times \Omega_{12})$. R_ν and R_Γ are the total number of random draws for ν_i and Γ_i respectively.

²⁰ The WESML estimator is consistent but not efficient because the shares are determined from data instead of being estimated following an approach developed by Cosslett (1981). However, we found it computationally difficult to simultaneously estimate both the model parameters and the sampling weights.

²¹ We use the term pseudo-log-likelihood function because we are not taking Cosslett's (1981) approach to obtain efficient estimates by maximum likelihood estimation. Vossmeier (2015) suggests a Bayesian approach that could be used to estimate the model.

The computational burden of evaluating equation (13) is considerable because of the nesting structure in the Monte-Carlo integrations. To reduce computation time, we used the Halton sequence (Train (2009)) to simulate random draws when we implemented the integrations. The estimation results we report are based on 150 Halton draws; we performed robustness checks on the base-line results in table 4 by increasing the number of draws to 300 and we found that the results changed very little.

4. Identification

We seek to estimate the joint probabilities of Supreme Court Justices' votes on a case and whether a case is selected by SCOTUS. Because we cannot exploit a natural or quasi-natural experiment to estimate the joint probabilities, we identify the probabilities by excluding from the case-outcomes model predictors of petition selection that are uncorrelated with the justices' rulings on the merits. We provide a careful institutional justification for the exclusion restrictions that is informed by the legal literature, and we perform robustness checks by estimating alternative models that relax some of those restrictions. Below, we discuss the factors that we assume are orthogonal to justice voting on the case merits.

Monthly Calendar Dummies and Docket Size

Monthly calendar dummies and docket size capture the impact of changes in the Justices' workload on their petition decisions. During the past several decades, the volume of Supreme Court petitions has steadily risen from about 2,000 petitions in 1960 to a little under 9,000 in 2012 (Federal Judicial Center (2012)). The task of processing thousands of petitions each year places a

clear and substantial burden on the Justices and their law clerks, and legal scholars have documented a variety of ways in which petition volume has affected both the quality of judicial review and the composition of cases ultimately heard by the Supreme Court.²²

Particularly relevant to our analysis are the findings of Cordray and Cordray (2004), which indicate that cert-acceptance rates are dramatically lower during the summer recess and the months of February and March. This variation cannot be explained by systematic differences in case characteristics, because petitions must be filed within 90 days of the lower court ruling and there is no reason to suspect that lower-court decisions on more meritorious cases are more likely to occur in certain months of the year. Furthermore, once the appeal is filed, the highly structured and largely automated process of reviewing and disposing of petitions leaves little room for manipulation (either by the Justices or by the contestants involved), meaning that the assignment of petition decisions to calendar months is largely a random process.²³

²² Qualitative research, for instance, suggests that the Solicitor General's Office typically drops a non-trivial number of cert-worthy petitions based on their perceptions of the Court's workload for that year (Griswold (1975)).

²³ Once a petition is submitted, the respondents have 30 days to file a brief in opposition. If they choose to submit a brief in opposition, the respondents can file for an extension (typically another 30 days). If the respondents waive their right to file a brief in opposition or if the 30-day response period expires, the petition is then circulated among the Justices' chamber the next time a conference list of petitions goes out. New conference lists are circulated on a weekly basis and the Court is scheduled to meet on pre-specified dates to discuss the petitions on each conference list. If the respondents file a brief in opposition, the Court waits approximately 10 days in order to allow the petitioner to file a reply, after which time the case is appended to the next conference list. Occasionally, when respondents fail to submit a brief in opposition, the Justice will instruct the respondents to prepare and file a brief in opposition within the next 30 days. On rare occasion, the Court will also invite the Solicitor General to file an *amicus curiae* brief expressing the views of the United States regarding whether the petition should be heard. Decisions on petitions may also be postponed until the subsequent conference if Justices need more time to consider the case. Such delays are rare, however, as the average time from submission to disposition of a petition is only six weeks (Public Information Office of the Supreme Court of the United States (2014)). Nelson (2009) provides more details on the petition-review process.

The observed monthly variation in cert-acceptance rates appears to be driven by work pressures that arise from the structuring of the Court’s calendar. For instance, the Justices’ workload peaks in February and March, when they are scheduled to not only hear a full set of arguments, but also to write their opinions for all the cases heard in the first four sessions of the term. At the same time, incentives for granting new petitions reach an annual low in February and March, primarily because January is the last session during which new cases can be added to the Court’s docket for the current term, and the Justices have ample time to fill up next term’s argument docket. Similar “institutional” forces can also explain the negative downturn in grant rates during the summer recess.²⁴

In sum, the month dummies and docket size variable primarily capture the effects of exogenous resource constraints and idiosyncrasies in the Court’s schedule on petition selection. Clearly, those influences do not affect the pro-business voting tendencies of justices on specific cases and they are unlikely to be correlated with unobserved influences on case-outcome votes.

Top Advocate Dummy and Indicator for Whether the Solicitor General is the Petitioner

Court resource constraints also justify our assumption that the top advocate dummy and the indicator of whether the Solicitor General (SG) is the petitioner are purely exogenous influences on petition selection. Because Justices must review thousands of petitions each year,

²⁴ In particular, Cordray and Cordray (2004, p. 209) explain that, “During the summer recess, the Court acts on almost no petitions for certiorari, and thus allows three months of filings to accumulate for disposition en masse upon their return in the fall. As a result, in each of the nine terms we canvassed from 1996 to 2002, the Court dealt with, on average, more than 1,600 petitions for certiorari at the end of the summer recess, as compared to an average of 574 petitions during each of the other periods.” The authors hypothesize that the Justices may “feel” like they are accepting large numbers of cases (even though their acceptances *rates* are strikingly low), or that the overwhelming volume of cases has a “numbing effect” on the Justices and their law clerks. A similar “overload effect” may be contributing to the low grant rates in February. The authors note that the Justices consider about 50% more petitions in February than in the average session—an increase that they attribute to the abnormally long recess that precedes the February session.

they have limited time to devote to any given petition.²⁵ Consequently, Justices look to a variety of indicators to determine the importance of a petition and whether it should be approved. One “marker” of quality and legal significance is whether the petition was submitted by the Solicitor General, SG (Cordray and Cordray (2008)). Due to the nature of the SG’s client (i.e., the United States), writs for certiorari from the SG’s Office generally merit the attention of the Supreme Court. In addition, as pointed by Cooper (1990), the Justices have confidence in the quality of those petitions because the SG’s Office has a reputation for rigorously screening and vetting its petitions, and because the Solicitor General is a repeat player before the Court. Days (1994) provides a history of the Office and stresses that it enjoys a tradition of independence and that the Solicitor General is not a “hired gun,” but is ultimately responsible for advancing the “interests of the United States,” which may, on occasion, conflict with a governmental entity.

A similar argument helps explain why SCOTUS grants petitions filed by certain seasoned Supreme Court advocates (many of whom were formerly employed in the SG’s Office) at a significantly higher rate than they grant petitions filed by other lawyers. Lazarus (2008) reports that the Justices’ clerks pay special attention to the petitions filed by prominent Supreme Court advocates because their reputations as top litigators convey an important message about the significance of the legal issues being presented and the credibility of the assertions being made. Thus, much in the same way that the Solicitor General’s petitions carry an experience-based stamp of quality assurance, the name of a top Supreme Court advocate on a petition acts as a beacon of potential cert-worthiness that helps distinguish it from the thousands of other competing appeals.

²⁵ Hart (1959), for example, estimated that SCOTUS Justices in the late 1950s could spend at most twenty minutes reviewing each nonfrivolous petition, while Chief Justice Hughes reported that his Justices were unable to spend more than four minutes discussing each petition at conference (Cordray and Cordray (2004)). Finally, Lazarus (2008) explains that the Justices do not read a large portion of petitions and, at most, read the memoranda prepared by the clerks.

Of course, it is possible that the high acceptance rates for SG and top-advocate petitions are driven, in part, by political considerations. If, for example, the Court has a pro-business orientation, but the current U.S. administration is enacting more private-sector regulations, then the Justices may actively seek out SG petitions to limit the scope of government regulation. However, because we include in our case-outcomes model an indicator for whether the federal government was a party in the case, we largely control for potential correlations between the SG-petitioner dummy in our petition-selection model and the error term in our case-outcomes model.²⁶

Indicator for whether the Court Invited the Solicitor General to Submit a Brief Analyzing the
Petition and Expressing the Views of the United States

On rare occasions, the Court will solicit the perspective of the SG's Office on the cert-worthiness of a petition through a call for the views of the Solicitor General (CVSG). Extant research suggests that the CVSG is another information-gathering tool that the Court uses to take advantage of the SG's independence and objectivity (Days (1994), and unmatched expertise in federal policy and complex regulatory matters. For example, Thompson and Wachtell (2009) find that 91% of the CVSG cases reviewed between 1997 and 2004 involved complex regulatory and statutory schemes, while only 7% involved significant issues of constitutional law. This statistical breakdown is consistent with the Justices' competence in dealing with questions of constitutionality, their relative unfamiliarity with regulatory systems, and the SG's obvious comparative advantage in advising the Court on issues related to federal regulation. The authors also observe that, although the SG's response to a CVSG is almost always accompanied with a

²⁶ When we included the top Supreme Court advocate dummy in the case outcomes model, its coefficient was statistically insignificant and the estimates of the model's other coefficients were barely affected.

suggestion for how the Court should rule on the case (assuming the petition is accepted), the Court's ultimate decision on the merits is uncorrelated with the SG's recommendations. Finally, Thompson and Wachtell point to a plethora of anecdotal evidence that decouples the CSVG from any political motivations, further supporting our treatment of the CSVG indicator as exogenous to the final votes in our case-outcomes model.²⁷

Lower-court Dummies

It is well-known that the Supreme Court is particularly prone to reverse the rulings of certain appellate courts—most notably, the Ninth Circuit and the U.S. Court of Appeals for the Federal Circuit on patent disputes.²⁸ Prominent explanations for high reversal rates include ideological differences between lower-court judges and Supreme Court Justices, as well as variation in circuit size.²⁹ Notable differences in the subject matter and the number of cases disposed by circuit courts have also been documented (Hofer (2010)), and this variation may account for part of the variation in cert-approval rates across appellate courts.

²⁷ Specifically, Thompson and Wachtell quote Justice Ginsberg as saying: “The Solicitor acts as a true friend of the Court when we call for its views on a case in which the United States is not a party.” They also point to the following quote from former Solicitor General Lee: “The Solicitor General’s office provides the Court from one administration to another with advocacy which is more objective, more dispassionate, more competent, and more respectful of the Court as an institution than it gets from any other lawyer or group of lawyers.”

²⁸ The Ninth Circuit has been called the “rogue circuit” due to the high reversal rates of its rulings by the Supreme Court. In addition, Tony Mauro, “Key Patent Dispute Divides Supreme Court Justices,” *National Law Journal*, October 15, 2014 reports that SCOTUS has an unspoken distrust of the U.S. Court of Appeals for the Federal Circuit as the ultimate arbiter of patent disputes because this circuit court frequently reverses trial judge findings; thus, SCOTUS steps in to reset the balance.

²⁹ Larger circuits tend to have greater difficulties in maintaining “uniform law” (aka, consistency in decisions across judges) within the circuit, which would account for the observed positive correlation between circuit size and SCOTUS reversals of lower-court rulings (Scott (2006)).

Although variation in cert-grating rates may, in part, be due to the policy preferences of SCOTUS justices, it is important to note that we control for whether the lower court's ruling on a case was pro-business in our case-outcomes model. This, in turn, enables the lower-court dummies in our petition-selection model to capture cert-granting factors that are unrelated to the pro-business inclinations of the Supreme Court Justices. As a robustness check, however, we include the lower-court dummies in an alternative specification of our case-outcomes model.³⁰

5. Estimation Results

Descriptive information about the voting behaviors of the Supreme Court justices provides some initial insights into their ideological preferences. In table 1, we break down the Rehnquist and Roberts Court justices' votes on the 198 cases in the Business Litigant Database that were granted a hearing with the Supreme Court between 1996 and 2011. There is a clear ideological divide in the Rehnquist Court justices' preferences: the share of liberal justices' (Souter, Stevens, Ginsberg, Breyer) votes that are pro-business is almost uniform at 37 percent, while the share of moderate and conservative justices' (Kennedy, Scalia, Thomas, O'Connor, Rehnquist) votes that are pro-business is at least 48 percent. The ideological divide grows in the Roberts Court, with

³⁰ It is worth noting that the petition-selection model does not control for circuit splits, which occur when appellate courts generate conflicting rulings on a particular legal issue. Although the Supreme Court is substantially more likely to grant cert in cases that create circuit splits, data on circuit splits are sparse, largely because identifying such cases would require reading and comparing thousands of appellate judicial opinions. However, the absence of a circuit split variable does not pose a problem for our model because the lower-case dummies broadly capture a circuit's tendency to diverge from other appellate courts on questions of law. For example, the high reversal rates of Ninth Circuit holdings partially reflect the Ninth Circuit's heightened probability of splitting with other appellate courts on legal issues. In addition, because nearly all cert-worthy cases involve circuit splits, circuit splits are unlikely to be correlated in a meaningful way with Supreme Court rulings on the merits. Thus, omitting circuit splits from the petition model should not affect the consistency of the estimates in the model.

four of the five liberal justices voting pro-business less than 44 percent of the time (Kagan's share, which is based on a relatively small number of votes, is an outlier at 55 percent) and four of the five conservative justices voting pro-business in more than 60 percent of relevant cases (Roberts' share is 57 percent).

Table 2 shows that the justices' ideological preferences have continued to diverge since Elena Kagan joined the Roberts Court in 2010, as the incidence of pro-business voting among conservative justices (82 to 91 percent) rose to nearly twice the rate among liberal justices (46 to 56 percent). Of course, these descriptive data do not account for differences in the cases that the Rehnquist and Roberts justices heard, differences in the cases that the Roberts Court has heard since 2010, or other non-ideological influences on the justices' voting behaviors. Our econometric model controls for those effects on the justices' votes, thus enabling us to provide a more accurate characterization of the justices' ideological preferences and how they have evolved.

Case Outcomes and Petition Selection Models

We estimate separate models of case outcomes and petition selection and then present estimates of the joint model of those decisions to show the effects of controlling for case selectivity. Table 3 presents the results of a simple binary logit estimation of the case outcomes equation that does not control for either case selection or justice preference heterogeneity. Generally, the coefficients for the individual justices indicate that their ideological preferences influence their probabilities of voting in favor of business to varying degrees. From the first two columns, we can see that pro-business voting propensities do not differ significantly between conservative justices and the conservative chief justice, who serves as the base case in each model. In contrast, the liberal justices' individual coefficients are negative and have some statistical reliability, indicating that their ideological preferences increase the likelihood (compared with the

chief justice) that they will vote against the business entity. Note that the magnitude and statistical reliability of the liberal justices' ideology effects increase from the Rehnquist to the Roberts Court, suggesting a rise in Court polarity.³¹

We crystalize this finding in columns 3 and 4 of the table by replacing the individual justices' dummies with a liberal ideology indicator that is defined to equal 1 if a justice is liberal and 0 otherwise. The estimated coefficients on this variable indicate that the liberal justices in both the Rehnquist and Roberts Courts are more likely than their moderate and conservative counterparts to vote against business. Importantly, the effect is statistically significant, implying that the two most recent courts are polarized to some extent along partisan lines.³² However, although the magnitude of the coefficients for the liberal ideology dummy increases between the Rehnquist and Roberts Courts, we cannot conclude that the Supreme Court is becoming increasingly polarized because the difference between the liberal-ideology coefficients is not statistically significant at conventional levels.

The control variables have plausible effects on case outcomes and reveal similarities and differences between the Rehnquist and Roberts courts. For example, conditional on agreeing to hear a business case, both courts are more likely to rule against business if the lower court ruled in favor of it. In addition, anti-business votes are more likely to occur if the Solicitor General submits an *amicus* brief in favor of the non-business entity, regardless of whether the non-business party is the petitioner or the respondent in the case. However, when the federal government is a litigant

³¹ This conclusion should be qualified because different chief justices serve as the base in each model. That said, the liberal justices' ideologies are still being compared with the ideology of a conservative chief justice.

³² As noted, the systematic difference indicates that the dummies capture ideological preferences not periodic intellectual disagreements between justices.

in a business case, the Rehnquist Court is less likely to rule in favor of business, while the rulings of justices in the Roberts Court are not affected. Furthermore, although both courts are more likely to rule in favor of business if the Solicitor General's *amicus* brief favors the business entity, the effect of the brief is statistically significant only in the Rehnquist Court when the business entity is the respondent, while the effect is statistically significant only in the Roberts Court when the business entity is the petitioner.

We also estimated simple probit petition selection models for each court in two ways: (1) using only the Bloomberg sample of petitions, and then (2) combining the Bloomberg sample with the BLD sample and estimating the model by WESML to control for the over-sampling of business cases that the Supreme Court agreed to hear. We present the estimation results for those models in appendix table 1. Generally, they validate empirically the variables that we discussed previously as influencing the Supreme Court's decision to hear a case. For example, a petitioned case that was previously heard by the Ninth Circuit Court, which we noted has been called the "rogue circuit" due to the high reversal rates of its rulings by the Supreme Court, has a higher likelihood of being heard by the Rehnquist and Roberts Courts than do cases from other circuit courts (the effect is statistically insignificant only when we estimate the model with the Bloomberg sample for the Roberts court). Cases brought to either the Rehnquist or Roberts Court by top Supreme Court advocates, including those who are serving as the U.S. Solicitor General, are more likely to be heard than are cases brought by other petitioners. And the likelihood that a petition is approved by either Court increases when SCOTUS justices ask the Solicitor General to express the views of the United States on the case.

The estimates also suggest that the Rehnquist and Roberts Courts differ in how they manage their caseloads. In particular, the Roberts Court is less likely to grant a petition as the

number of cases on its docket increases, but the Rehnquist Court's decision to hear a case is not significantly correlated with its docket size. Similarly, while the probability that the Rehnquist Court approves a petition does not vary significantly across the Court's calendar, the Roberts Court is less likely to approve a petition if it makes its decision during the summer session.

Joint Model of Case Outcome and Case Selection

We now present estimates of the joint mixed-logit case outcomes model and the probit petition selection model, using as our base case the Bloomberg subsample to estimate the selection model. The estimator for this joint model is given by the likelihood function in equation (13); for sensitivity purposes we also report estimates using the combined Bloomberg and the BLD samples to estimate the selection model with the pseudo-likelihood function given in equation (14). The joint estimation of case outcomes and petition selection is validated statistically by the estimated correlations of the selection error term and the ideology dummy variables in columns 1 and 2 of table 4, which exceed their standard errors and are statistically significant in all but one case. The statistically significant coefficients for the standard deviations of the conservative/moderate and liberal ideology dummy variables for all of the models in the table provide statistical justification for estimating the case outcomes model by mixed-logit.

As we found previously when we estimated only the case outcomes model, the estimated coefficients for the moderate and conservative justices are not statistically significantly different from the Chief Justice's coefficients for both the Rehnquist and the Roberts Court. However, we do find for the joint model that the coefficients for the liberal justices on the Rehnquist Court do not even exceed their standard errors, meaning that the coefficients for all the justices on that court are not statistically significantly different from the Chief Justice's base coefficient. In other words, business case outcomes in the Rehnquist Court do not appear to be influenced by differences in

the justices' politically-based ideological preferences. In contrast, the coefficients for the liberal justices on the Roberts Court are negative, statistically significant, and roughly of the same magnitude, indicating that differences in the justices' political ideologies continue to strongly influence the rulings of the Roberts Court, even after controlling for case selection and preference heterogeneity.

Columns 3 and 4 of table 4 present the joint-model results when we replace the individual justice indicators with a single liberal ideology dummy. Interestingly, this parsimonious specification indicates that liberal justices in the Rehnquist Court are statistically significantly less likely (at the 90% level) than their moderate and conservative colleagues to vote pro-business. This finding of a statistically significant ideological effect in the Rehnquist Court conflicts with the statistically insignificant individual justice coefficients in column 1 of table 4, although it is consistent with earlier results produced by the simple binary logit model of case outcomes (column 3 of table 3). Importantly, however, column 4 of table 4 shows that the coefficient on the liberal justices' dummy in the Roberts Court is negative, highly significant, and nearly four times larger than its counterpart in the Rehnquist Court. Thus, both specifications of the joint model indicate that the Supreme Court has become much more polarized along partisan lines under Chief Justice Roberts.

Taken together, the preceding estimation results coalesce around two main findings. First, the influences of political ideology on justice voting behaviors are both greater and, within a given court, exhibit greater variation in the Roberts Court than in the Rehnquist Court. Second, controlling for petition selection is critical to accurately estimating and comparing Court polarity. In particular, marked differences in the polarization of the Roberts and Rehnquist Courts emerged only when we correctly controlled for petition selection. This result suggests that the petition-

selection behaviors of the Roberts Court have worked to mute the ideological preferences of its liberal and conservative justices, while the Rehnquist Court's petition selection behaviors have worked in the opposite direction by bringing forward cases that elicit and reveal the ideological divisions amongst its member justices.³³

Robustness

We explored the robustness of our findings that show the Supreme Court's increasing polarization in a number of ways. First, we re-estimated the joint model using the combined Bloomberg and BLD sample to estimate the selection model. As shown in appendix table 2, the estimated coefficients for the case outcomes model under this specification are generally consistent with the estimates we obtained for the specification of case outcomes in table 4.³⁴ We also assessed the possibility that the Rehnquist and Roberts Courts have different ideological preferences and degrees of polarization simply because different justices serve on each court. More specifically, we addressed this concern by re-estimating the joint model using the subsample of justices who served on both courts. Appendix table 3, which contains the estimated coefficients for this specification, shows that the liberal ideology dummy in the Rehnquist Court is statistically insignificant and that the coefficient on the liberal ideology dummy in the Roberts Court model remains largely unchanged, indicating that justices who served on the Rehnquist Court have become more ideologically motivated under the Roberts Court.

³³ The availability of data on justices' votes on petitions could shed additional light on why accounting for selection affects estimates of the justices' ideological preferences. For example, such data may reveal patterns of strategic voting by justices.

³⁴ Petition selection model results for all the robustness tests in this section are available upon request. Generally, the estimates did not change much from the estimates we obtained in the base case (table 4).

Finally, recall that our identification strategy to estimate the joint model involved omitting the lower court dummy variables from the case outcomes equation. As noted earlier, it could be argued that those variables should also be included in the specification of case outcomes. Thus, in appendix table 4, we present estimated coefficients for a specification of the case outcomes model that includes lower court dummy variables, meaning that our petition-selection model is identified only by the month calendar dummies, docket size, the top advocate petitioner dummy variable, the solicitor general petitioner dummy variable, and an indicator for whether SCOTUS invited the solicitor general to submit a brief. We argued that those variables are clearly exogenous to rulings on case merits. In this final specification, we also included in the case outcomes model a series of case topic dummies that classify cases according to their legal and substantive content. The case topic fixed effects control for case heterogeneity and the possibility that vote outcomes vary systematically across case topics.³⁵ We find that the coefficients for the liberal ideology dummy variables are not affected much by those changes. We have therefore found that our estimates of the effect of the justices' ideological preferences on case outcomes are robust to changes in the samples that we use to estimate the petition selection specification, the justices that are included in the samples, and the specification of the case outcomes model.

Quantitative Implications and Qualifications

We have stressed that the estimates of justice ideological preferences are affected by case selectivity and that the endogenous decision to approve a petition should be jointly estimated with case outcomes. Table 5 provides quantitative evidence to clarify and underscore those points by showing how controlling for case selection influences the conservative and liberal justices'

³⁵ The case topic dummies were statistically insignificant in all the petition-selection models that we estimated.

predicted probabilities of voting in favor of business on a typical business case. In particular, when we do not control for case selection (column 1), the probability that conservative justices on the Rehnquist Court will vote in favor of business is 13 percentage points higher than the probability that liberal justices will vote in favor of business, while the difference between the conservative and liberal justices' probabilities of voting in favor of business is 21 percentage points in the Roberts Court. When we control for case selection (column 3), the difference between the conservative and liberal justices' probabilities of voting in favor of business is 8 percentage points for the Rehnquist Court and 27 percentage points for the Roberts Court—a statistically significant difference.

We obtain similar differences between the conservative and liberal justices' pro-business voting probabilities when we focus only on those justices who served on both Courts (columns 2 and 4). Thus, controlling for case selection reduces the estimated polarization of the Rehnquist Court justices' ideological preferences, but increases the polarization of the Roberts Court justices' ideological preferences, with the overall finding that polarization has sharply increased between the two most recent and, based on historical evidence, the most ideologically divided of all U.S. Supreme Courts.

Although we have limited our analysis to business cases, which currently account for roughly 40 percent of the Court's docket (Rosen (2013)), we believe that our estimates of ideology serve as a lower bound on the true extent of polarization because business cases are often decided on statutory, rather than constitutional, grounds. Thus, because justices tend to have entrenched preconceived views on questions of constitutionality (Rosen (2013)), expanding our sample to include non-business cases that involve constitutional issues would likely increase our estimates of court polarization.

Another potential limitation of our analysis is that we focus only on the two most recent courts. However, we have indicated that concerns about polarization have become increasingly stronger during the past two decades. Thus, comparing the Roberts Court to earlier (pre-Rehnquist) courts would, in all likelihood, only strengthen our finding that polarization has sharply increased under the Roberts Court.³⁶

6. Potential Implications and Future Mitigation

We have concluded that justices deviate from purely legalistic behavior and allow their political ideology to influence their decisions. Chief Justice Roberts has warned that such behavior raises serious concerns if it leads to extreme polarization and partisanship, although he has asserted that his court does not behave in this manner.

Our findings challenge Justice Roberts' characterization of his court's behavior. In particular, we have found that justices on the Roberts Court have strong and divided ideological preferences that affect their rulings on business cases and mirror the polarization in Congress (McCarty, Poole, and Rosenthal (2006)) and the partisanship of the presidency. Bartels and Johnston (2013) argue that, because the Supreme Court's justices are unelected, serve life terms, and are virtually free from public accountability, it is crucial for the Court to maintain a reputation among the public as impartial, trustworthy, and above the unrelenting politics that characterizes

³⁶ Recall that we also pointed out that by comparing the Roberts and Rehnquist Courts, we limit the possibility that differences in the types of cases that make it into the SCOTUS pool of petitions are driving our results because the types of cases being processed by the lower courts during the Rehnquist and Roberts Courts are unlikely to be categorically different. Differences in the types of cases processed by the lower courts may arise if we compared the behavior of the Roberts Court with the behavior of courts that preceded the Rehnquist Court.

and compromises the two other branches of government. Unfortunately, the sharp increase in polarization that we documented may be affecting the Court's reputation, as suggested by a 2014 Gallup poll, which found that 61% of Americans had a "great deal" or a "fair amount" of faith in the Supreme Court—the lowest share of Americans to express trust in the judicial branch since Gallup first asked the question in 1976.

Why has the Court become more politicized? A number of forces appear to be at work, including advocacy groups providing greater input to the legal process, and the growing politicization of Congress, the President, and, more generally, the legal world. At the same time, Posner (2008) points out that judges and academics, who were once close, have grown apart as academic law—influenced in part by social science and economics—has become increasingly critical of the subjectivity involved in judicial decision-making.³⁷

It is admittedly difficult to quantify the adverse consequences of the Court's polarization and partisanship in terms of its effect on the efficiency and equity of specific policies and programs. For example, Crandall and Winston (2003) and Winston (2006) question the efficacy of antitrust policy in improving consumer welfare, including major monopolization cases that were decided by the Supreme Court; but their critique includes several decades when the Court was not considered to be polarized.

Chief Justice Roberts has broadly indicated that the greatest danger of polarization, as reflected by a steady flow of 5-4 decisions, is that it threatens the "rule of law."³⁸ (In the aftermath

³⁷ Emily Brazen, "Better Judgment", *New York Times Magazine*, June 21, 2015 describes how Justice Oliver Wendell Holmes Jr. was influenced by a Harvard instructor, Harold Laski, to read John Stuart Mill and Adam Smith and how those works caused him to change his views on freedom of speech. Brazen notes judges rarely change their minds today because they wrap themselves in a mythos of authority and certainty.

³⁸ See Jeffrey Rosen, "The Supreme Court Has a Legitimacy Crisis, But Not for the Reason You Think," *New Republic*, June 11, 2012.

of Justice Scalia's passing, a similar concern can be expressed about deadlocked 4-4 decisions.) Narrow decisions are considered by Supreme Court observers to be the most political and therefore the most likely to be overturned by later Courts. Polarization may also adversely affect the behavior of the justices' law clerks by making them reluctant to recommend certain cert-worthy petitions that would not be well-received by partisan justices. In short, polarization makes it more difficult for the Court to work out reasonable compromises and to reach durable agreements on important matters affecting the nation.

It is also difficult to explain the lack of success that Chief Justice Roberts has had in reducing polarization on the Court, despite his stated ambition to do so. Accordingly, Chemerinsky (2014), among others, has recommended serious consideration of 18-year term limits for Justices to help stem the growing political nature of the Court. Meanwhile, Lim (forthcoming) has found that the outcomes of state courts appear to be less ideologically driven when courts are subjected to greater media coverage, which may suggest that the Supreme Court's polarity might be reduced to some extent if it allowed television coverage of its proceedings. Such actions may be premature and even unrealistic if the Court has any say in their approval. At the same time, however, our findings amplify a growing concern among the public and legal specialists that the Justices' lack of accountability may have created a Court whose members' ideological divide mirrors that of society's, rather than a Court whose members provide wisdom to help guide the evolution of American society.

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Table 1. Summary of Justices' Votes

	Rehnquist's Court (1996-2005)		Roberts' Court (2005-2011)	
	Total Number of Votes	Number of Votes Pro- Business (%)	Total Number of Votes	Number of Votes Pro- Business
A. M. Kennedy (Conservative)	126	60 (48)	72	44 (61)
A. Scalia (Conservative)	124	66 (53)	72	44 (61)
C. Thomas (Conservative)	125	64 (51)	71	44 (62)
D. H. Souter (Liberal)	123	45 (37)	42	18 (43)
E. Kagan (Liberal)	--	--	11	6 (55)
J. P. Stevens (Liberal)	125	46 (37)	54	18 (33)
R. B. Ginsburg (Liberal)	125	47 (38)	72	29 (40)
S. A. Alito (Conservative)	--	--	68	43 (63)
S. D. O'Connor (Moderate)	120	59 (49)	2	0 (0)
S. G. Breyer (Liberal)	123	45 (37)	68	29 (43)
S. Sotomayor (Liberal)	--	--	26	9 (35)
W. H. Rehnquist (Conservative)	124	59 (48)	--	--
J. Roberts (Conservative)	--	--	70	40 (57)
Total number of votes	1115	491 (44)	628	324 (52)
Total number of cases	126	--	72	--

Table 2. More Detailed Summary of Justices' Votes under Roberts' Court

	In the Period of D. H. Souter (2005-2009)		In the Period of S. Sotomayor (2009-2011)		In the Period of E. Kagan (2010-2011)	
	Total Number of Votes	Number of Votes Pro- Business (%)	Total Number of Votes	Number of Votes Pro- Business	Total Number of Votes	Number of Votes Pro- Business
A. M. Kennedy (Conservative)	42	27 (64)	26	15 (58)	11	10 (91)
A. Scalia (Conservative)	42	24 (57)	26	17 (65)	11	10 (91)
C. Thomas (Conservative)	41	25 (61)	26	16 (62)	11	9 (82)
D. H. Souter (Liberal)	42	18 (43)	--	--	--	--
E. Kagan (Liberal)	--	--	9	4 (44)	11	6 (55)
J. P. Stevens (Liberal)	42	15 (36)	10	2 (20)	--	--
R. B. Ginsburg (Liberal)	42	16 (38)	26	9 (35)	11	6 (55)
S. A. Alito (Conservative)	38	24 (63)	26	16 (62)	11	10 (91)
S. D. O'Connor (Moderate)	2	0 (0)	--	--	--	--
S. G. Breyer (Liberal)	38	18 (47)	26	8 (31)	11	5 (46)
S. Sotomayor (Liberal)	--	--	26	9 (35)	9	5 (56)
J. Roberts (Conservative)	40	21 (53)	26	16 (62)	11	10 (91)
Total number of votes	369	188 (51)	227	112 (49)	91	71 (73)
Total number of cases	42	--	26	--	11	--

Table 3. Simple Logit Estimates of Case Outcome Equation (Probability of Pro-Business)

Variables	(1) Sub-sample of Rehnquist's court	(2) Sub-sample of Roberts' court	(3) Sub-sample of Rehnquist's court	(4) Sub-sample of Roberts' court
Constant	0.8363 (0.2640)	0.5734 (0.3195)	0.9591 (0.1957)	0.7686 (0.2216)
<i><u>Justice dummies (Rehnquist is the base in models estimated on a subsample of Rehnquist's court and Roberts is the base in models estimated on a subsample of Roberts' court)</u></i>				
A. M. Kennedy (Conservative)	0.0232 (0.2828)	0.2287 (0.3663)		
A. Scalia (Conservative)	0.2919 (0.2848)	0.2287 (0.3663)		
C. Thomas (Conservative)	0.1962 (0.2837)	0.2716 (0.3685)		
D. H. Souter (Liberal)	-0.5359 (0.2889)	-0.6293 (0.4253)		
E. Kagan (Liberal)	n.a.	-0.0681 (0.7109)		
J. P. Stevens (Liberal)	-0.5356 (0.2874)	-1.1111 (0.4027)		
R. B. Ginsburg (Liberal)	-0.4935 (0.2869)	-0.7618 (0.3661)		
S. A. Alito (Conservative)	n.a.	0.3061 (0.3734)		
S. D. O'Connor (Moderate) ¹	0.1066 (0.2865)	n.a.		
S. G. Breyer (Liberal)	-0.5404 (0.2888)	-0.6400 (0.3699)		
S. Sotomayor (Liberal)	n.a.	-1.0099 (0.5132)		
<i><u>Ideology dummy</u></i>				
Liberal ideology dummy	n.a.	n.a.	-0.6492 (0.1377)	-0.9767 (0.1800)
<i><u>Control variables</u></i>				
Dummy variable: lower court ruled in favor of business	-0.7584 (0.1839)	-0.9602 (0.2866)	-0.7585 (0.1837)	-0.9386 (0.2851)
Dummy variable: federal government is non-business Litigant	-0.6399 (0.1919)	0.2298 (0.2459)	-0.6397 (0.1918)	0.2122 (0.2439)
Dummy variable: Solicitor General submitted <i>amicus</i> brief in favor of business petitioner	0.2587 (0.2374)	0.9390 (0.3060)	0.2578 (0.2372)	0.9482 (0.3044)
Dummy variable: Solicitor General submitted <i>amicus</i> brief in favor of non-business petitioner	-1.9130 (0.2751)	-0.6255 (0.3551)	-1.9088 (0.2748)	-0.6313 (0.3542)
Dummy variable: Solicitor General submitted <i>amicus</i> brief in favor of business respondent	3.0377 (0.7514)	0.6319 (0.4130)	3.0359 (0.7513)	0.6099 (0.4097)
Dummy variable: Solicitor General submitted <i>amicus</i> brief in favor of non-business respondent	-0.8509 (0.2505)	-1.2594 (0.2770)	-0.8505 (0.2503)	-1.2478 (0.2756)
Dummy Variable: Economics Topic	-0.2512 (0.1453)	0.2010 (0.1878)	-0.2514 (0.1452)	0.2094 (0.1869)

Table 3. Simple Logit Estimates (continued)

	(1) Sub-sample of Rehnquist's court	(2) Sub-sample of Roberts' court	(3) Sub-sample of Rehnquist's court	(4) Sub-sample of Roberts' court
Log Likelihood	-635.56	-373.84	-636.31	-375.81
Number of Cases	126	72	126	72
Number of Observations	1115	628	1115	628

Table 4. Joint Estimation of Mixed-Logit Case Outcome Model and Probit Case Selection Model (The selection model is estimated on the Bloomberg subsample)

Variables	(1)	(2)	(3)	(4)
	Mixed logit with control for sample selection on sub-sample of Rehnquist's court	Mixed logit with control for sample selection on sub-sample of Roberts' court	Mixed logit with control for sample selection on sub-sample of Rehnquist's court	Mixed logit with control for sample selection on sub-sample of Roberts' court
Part 1: Case Outcomes Equation				
Constant	2.8010 (1.3275)	1.6081 (1.2006)	4.3172 (1.4235)	2.7233 (1.4282)
<i>Justice and ideology dummies (Rehnquist as the base in models on subsample of Rehnquist's court and Robert as the base in models on subsample of Roberts' court)</i>				
A. M. Kennedy (Conservative)	0.1198 (0.5202)	0.8175 (0.7418)		
A. Scalia (Conservative)	0.9548 (0.5314)	0.8175 (0.7418)		
C. Thomas (Conservative)	0.6777 (0.5255)	0.9637 (0.7588)		
D. H. Souter (Liberal)	-0.3368 (0.8343)	-2.9337 (1.2229)		
E. Kagan (Liberal)	--	-3.0797 (1.5531)		
J. P. Stevens (Liberal)	-0.4304 (0.8355)	-3.9674 (1.2254)		
R. B. Ginsburg (Liberal)	-0.2859 (0.8313)	-3.1729 (1.1684)		
S. A. Alito (Conservative)	--	0.8317 (0.7455)		
S. D. O'Connor (Moderate) ¹	0.3077 (0.5271)	--		
S. G. Breyer (Liberal)	-0.4352 (0.8361)	-3.0045 (1.1731)		
S. Sotomayor (Liberal)	--	-3.0296 (1.3385)		
Mean of Liberal ideology dummy	--	--	-1.2839 (0.6740)	-4.7475 (1.2079)
Standard deviation of conservative/moderate ideology dummy	6.6314 (1.0202)	8.1809 (1.5127)	6.4444 (0.9552)	7.8631 (1.9059)
Standard deviation of liberal ideology dummy	6.8372 (1.3107)	3.8474 (0.8171)	5.1914 (0.7749)	4.0222 (0.9633)
Correlation between conservative/moderate and liberal ideology dummy	0.6035 (0.0678)	0.4031 (0.1456)	0.5897 (0.0877)	0.6536 (0.1016)
Correlation between selection error and conservative/moderate ideology dummy	0.7882 (0.0842)	-0.2837 (0.1012)	0.3461 (0.1263)	-0.3987 (0.1170)
Correlation between selection error and liberal ideology dummy	0.2674 (0.1167)	0.2548 (0.2083)	0.0300 (0.1368_	0.1135 (0.1724)

Table 4 Joint Estimation of Mixed-Logit Case Outcome Model and Probit Case Selection Model (Continued)

Variables	(1)	(2)	(3)	(4)
	Mixed logit with control for sample selection on sub-sample of Rehnquist's court	Mixed logit with control for sample selection on sub-sample of Roberts' court	Mixed logit with control for sample selection on sub-sample of Rehnquist's court	Mixed logit with control for sample selection on sub-sample of Roberts' court
<i>Law variables</i>				
Dummy of lower court ruled in favor of business	-4.6736 (1.3474)	-1.2649 (1.4197)	-3.4832 (1.0039)	-1.0990 (1.4430)
Dummy of federal government is non-business litigant	-2.3399 (1.6176)	-0.5023 (1.2512)	-5.1020 (1.3870)	1.4258 (1.3066)
Dummy of Solicitor General submitted amicus brief in favor business petitioner	-0.0743 (1.6844)	4.3603 (1.2699)	-1.0884 (1.4527)	5.4504 (1.6837)
Dummy of Solicitor General submitted amicus brief in favor non-business petitioner	-5.4166 (1.8916)	-2.4784 (1.3156)	-9.5795 (2.1456)	-2.1486 (1.4341)
Dummy of Solicitor General submitted amicus brief in favor business respondent	9.3134 (3.4880)	4.3911 (1.6947)	7.4362 (2.2434)	3.8868 (1.7797)
Dummy of Solicitor General submitted amicus brief in favor non-business respondent	-4.7554 (1.8921)	-3.5744 (1.3368)	-5.4733 (1.3271)	-3.3499 (1.8787)
Dummy of Econ Topic	-1.0262 (0.9549)	0.0231 (0.7125)	-0.0285 (0.7838)	0.7245 (0.8951)
Part 2: Case Selection Equation				
Constant	-2.1136 (0.8419)	1.7606 (1.9245)	-1.8058 (0.7576)	2.0230 (1.8823)
Lower Court Dummy 2	-0.0146 (0.2622)	0.3945 (0.3353)	0.0052 (0.2720)	0.4004 (0.3067)
Lower Court Dummy 4	0.4089 (0.2561)	-0.2276 (0.4676)	0.3910 (0.2399)	-0.2616 (0.4149)
Lower Court Dummy 6	0.4988 (0.1959)	0.2735 (0.3506)	0.4840 (0.1822)	0.2299 (0.3204)
Lower Court Dummy 7	0.0420 (0.3049)	0.4755 (0.2439)	0.1474 (0.2638)	0.4835 (0.2251)
Lower Court Dummy 8	0.4524 (0.2214)	0.5415 (0.2518)	0.5481 (0.2103)	0.5816 (0.2679)
Lower Court Dummy 9	0.3515 (0.1655)	0.2887 (0.2435)	0.3643 (0.1543)	0.3377 (0.2496)
Lower Court Dummy 11	0.2375 (0.2159)	-0.2912 (0.6416)	0.3162 (0.2078)	-0.2129 (0.6439)
Lower Court Dummy 13	0.2053 (0.3532)	0.2783 (0.4829)	0.1658 (0.3399)	0.3047 (0.4964)
Dummy of top Supreme Court advocates	1.1694 (0.1892)	0.9259 (0.2327)	1.1264 (0.1929)	1.0140 (0.2380)
Dummy of top Supreme Court advocates working as the U.S. Solicitor General	0.5407 (0.3072)	2.1588 (0.6405)	0.5079 (0.2762)	2.0394 (0.6670)
Indicator for whether SCOTUS invited the Solicitor General to express the views of the United States	1.0789 (0.3066)	0.9974 (0.3398)	1.0511 (0.3437)	0.9078 (0.3398)
Annual # of cases on SCOTUS docket (in thousands)	0.0215 (0.0968)	-0.3724 (0.1732)	-0.0136 (0.0883)	-0.3599 (0.1554)
Dummy of decided in February session	-0.1745 (0.2659)	-0.6020 (0.3855)	-0.2048 (0.2248)	-0.7101 (0.3469)
Dummy of decided in March session	-0.0861 (0.2140)	-0.1414 (0.2858)	-0.1190 (0.2061)	-0.2298 (0.2851)

Table 4 Joint Estimation of Mixed-Logit Case Outcome Model and Probit Case Selection Model (Continued)

Variables	(1)	(2)	(3)	(4)
	Mixed logit with control for sample selection on sub-sample of Rehnquist's court	Mixed logit with control for sample selection on sub-sample of Roberts' court	Mixed logit with control for sample selection on sub-sample of Rehnquist's court	Mixed logit with control for sample selection on sub-sample of Roberts' court
Dummy of decided in Summer session (Juy. – Sep.)	-0.1307 (0.1581)	-0.6431 (0.2821)	-0.1937 (0.1561)	-0.6974 (0.2819)
Dummy of decided in November session	-0.2137 (0.2167)	-0.6053 (0.2880)	-0.3482 (0.2036)	-0.6874 (0.2624)
Log-likelihood	-650.49	-393.08	-652.79	-395.67
Number of cases in outcome equation	126	72	126	72
Number of observations in outcome equation	1115	628	1115	628
Number of cases in selection equation	1733	1035	1733	1035
Total number of observations	2848	1663	2848	1663

Note: The models are estimated by mixed-logit based on 150 halton draws.

Table 5. Comparing the Predicted Probability of Voting Pro-Business across Models

	(1)	(2)	(3)	(4)
	Simple logit without control for case selection on full sample of justices (Model 3 and 4 of Table 3)	Simple logit without control for case selection on subsample of justices serving both courts	Mixed logit with control for case selection on full sample of justices (Model 3 and 4 of Table 5)	Mixed logit with control for case selection on subsample of justices serving both courts (Model 1 and 2 of Table 7)
Rehnquist court				
Conservative justices (p_1)	0.50 0.37	0.51 0.37	0.44 0.36	0.45 0.39
Liberal justices (p_2)	0.99	0.99	0.96	0.95
Probability of $p_1 > p_2$				
Roberts court				
Conservative justices (p_1)	0.61 0.40	0.61 0.40	0.65 0.38	0.65 0.37
Liberal justices (p_2)	0.99	0.99	0.99	0.99
Probability of $p_1 > p_2$				

Appendix Table 1. Estimation Results of Petition Selection Model (Probability of Being Approved)

<i>Parameters in Selection Model</i>	(1)	(2)	(3)	(4)
	Simple Probit on Bloomberg subsample during the period of Rehnquist's court	Simple Probit on Bloomberg subsample during the period of Roberts' court	WESMLE on subsample of Rehnquist's court (including both Bloomberg subsample and BLD subsample)	WESMLE on subsample of Roberts' court (including both Bloomberg subsample and BLD subsample)
Constant	-2.0380 (0.8624)	1.9961 (1.8010)	-1.5856 (0.9389)	0.7962 (1.9629)
Lower Court Dummy 1	--	--	0.3860 (0.4233)	0.1861 (0.6968)
Lower Court Dummy 2	0.0042 (0.2899)	0.2906 (0.2892)	0.1861 (0.3071)	0.7287 (0.3210)
Lower Court Dummy 3	0.0589 (0.3502)	0.2124 (0.3838)	0.2476 (0.3650)	0.3580 (0.4612)
Lower Court Dummy 4	0.3412 (0.2553)	-0.3121 (0.4654)	0.4014 (0.2937)	0.0418 (0.4897)
Lower Court Dummy 5	0.2715 (0.2196)	-0.3221 (0.4321)	0.2819 (0.2560)	-0.3628 (0.6132)
Lower Court Dummy 6	0.5793 (0.2293)	0.2528 (0.3010)	0.4978 (0.2444)	0.4817 (0.3598)
Lower Court Dummy 7	0.0597 (0.3056)	0.5218 (0.2909)	0.3867 (0.2972)	0.7409 (0.3513)
Lower Court Dummy 8	0.4994 (0.2558)	0.5272 (0.3616)	0.5918 (0.2725)	0.6114 (0.4646)
Lower Court Dummy 9	0.4081 (0.1895)	0.2382 (0.2449)	0.6289 (0.2077)	0.5711 (0.2809)
Lower Court Dummy 10	-0.2829 (0.4503)	0.0883 (0.4714)	-0.0332 (0.4262)	0.3619 (0.5042)
Lower Court Dummy 11	0.3473 (0.2268)	-0.2875 (0.4190)	0.3232 (0.2690)	0.4035 (0.3657)
Lower Court Dummy 12	-0.3702 (0.5802)	-0.2065 (0.4783)	0.4917 (0.3740)	0.1795 (0.4836)
Lower Court Dummy 13	0.2502 (0.4372)	0.2808 (0.4400)	0.2628 (0.4801)	0.5228 (0.5037)
Dummy of top Supreme Court advocates	1.1768 (0.2355)	0.9854 (0.2400)	1.3549 (0.2451)	1.4328 (0.2369)
Dummy of top Supreme Court advocates working as the U.S. Solicitor General	0.9679 (0.4344)	1.8329 (0.6873)	0.9089 (0.4503)	1.1075 (0.5289)
Indicator for whether SCOTUS invited the Solicitor General to express the views of the United States	1.1705 (0.4505)	0.6446 (0.4157)	1.7903 (0.4029)	1.1734 (0.4086)
Annual # of cases on SCOTUS docket (in thousands)	0.0163 (0.0970)	-0.3666 (0.1909)	-0.0543 (0.1043)	-0.2624 (0.1480)
Dummy of decided in January session	-0.0468 (0.2693)	-0.2972 (0.3070)	0.3107 (0.3230)	-0.2519 (0.3729)
Dummy of decided in February session	-0.2784 (0.3094)	-0.9296 (0.4790)	-0.1365 (0.3772)	-0.7504 (0.5272)
Dummy of decided in March session	-0.1995 (0.2923)	-0.4396 (0.3637)	-0.0669 (0.3628)	-0.3920 (0.4460)
Dummy of decided in April session	-0.0537	-0.4401	0.0959	-0.2593

(0.2835) (0.3781) (0.3531) (0.4411)

Appendix Table 1. Estimation Results of Petition Selection Model (Continued)

<i>Parameters in Selection Model</i>	(1)	(2)	(3)	(4)
	Simple Probit on Bloomberg subsample during the period of Rehnquist's court	Simple Probit on Bloomberg subsample during the period of Roberts' court	WESMLE on subsample of Rehnquist's court (including both Bloomberg subsample and BLD subsample)	WESMLE on subsample of Roberts' court (including both Bloomberg subsample and BLD subsample)
Dummy of decided in May session	-0.4285 (0.3340)	-0.7354 (0.3877)	0.1212 (0.3548)	-0.5188 (0.2428)
Dummy of decided in June session	-0.3033 (0.2819)	-0.1516 (0.3010)	-0.0216 (0.3388)	0.0554 (0.3627)
Dummy of decided in Summer session	-0.2496 (0.2574)	-0.9356 (0.3209)	-0.0849 (0.3220)	-0.6086 (0.2613)
Dummy of decided in October session	0.1596 (0.2857)	-0.2477 (0.3389)	0.3079 (0.3574)	-0.2131 (0.4193)
Dummy of decided in November session	-0.2204 (0.3007)	-0.8923 (0.3985)	0.1559 (0.3481)	-0.4479 (0.4096)
Log-likelihood	-260.67	-158.62	-228.01	-130.64
Number of observations	1697	1017	1865	1107

Appendix Table 2. Robustness Checks: Joint Estimation of Mixed-Logit Case Outcome Model and Probit Case Selection Model (The selection model is estimated on combined sample of Bloomberg and BLD by WESMLE)

Variables	(1) Mixed logit with control for sample selection on sub-sample of Rehnquist's court	(2) Mixed logit with control for sample selection on sub-sample of Roberts' court
Constant	5.5695 (1.1404)	3.3165 (1.4895)
Mean of Liberal ideology dummy	-1.7092 (0.8784)	-5.6606 (1.2241)
Standard deviation of conservative/moderate ideology dummy	6.3281 (0.8660)	7.0422 (1.4031)
Standard deviation of liberal ideology dummy	4.9800 (0.7679)	4.5366 (0.9313)
Correlation between conservative/moderate and liberal ideology dummy	0.5851 (0.0538)	0.5922 (0.1091)
Correlation between selection error and conservative/moderate ideology dummy	-0.0078 (0.1190)	-0.3002 (0.0999)
Correlation between selection error and liberal ideology dummy	0.0391 (0.1161)	0.2378 (0.1258)
Dummy of lower court ruled in favor of business	-3.3560 (0.9192)	-1.9499 (1.4776)
Dummy of federal government is non-business litigant	-3.8810 (0.9272)	1.3408 (1.1422)
Dummy of Solicitor General submitted amicus brief in favor business petitioner	-1.1567 (1.1418)	5.3745 (1.7223)
Dummy of Solicitor General submitted amicus brief in favor non-business petitioner	-7.5675 (1.3817)	-2.5675 (1.2744)
Dummy of Solicitor General submitted amicus brief in favor business respondent	6.2962 (2.0716)	2.1809 (1.4600)
Dummy of Solicitor General submitted amicus brief in favor non-business respondent	-4.6294 (1.2893)	-4.0472 (1.8942)
Dummy of Econ Topic	-2.4573 (0.7757)	1.5659 (0.9809)

Note: The models are estimated by mixed-logit based on 150 halton draws.

Appendix Table 3. Robustness Checks: Joint Estimation of Mixed-Logit Case Outcome Model and Probit Case Selection Model on the Subsample of Justices Serving Both the Two Courts (The selection model is estimated on Bloomberg subsample)

Variables	(1) Mixed logit with control for sample selection on sub-sample of Rehnquist's court	(2) Mixed logit with control for sample selection on sub-sample of Roberts' court
Constant	3.3177 (1.3065)	2.3634 (1.4885)
Mean of Liberal ideology dummy	-0.8635 (0.7036)	-4.1260 (1.4507)
Standard deviation of conservative/moderate ideology dummy	7.0545 (1.2603)	5.8860 (1.3727)
Standard deviation of liberal ideology dummy	4.8685 (0.8248)	3.6559 (0.9833)
Correlation between conservative/moderate and liberal ideology dummy	0.6393 (0.0951)	0.6007 (0.1459)
Correlation between selection error and conservative/moderate ideology dummy	0.1607 (0.1540)	-0.4614 (0.1625)
Correlation between selection error and liberal ideology dummy	-0.3987 (0.1744)	0.1563 (0.2582)
Dummy of lower court ruled in favor of business	-1.1666 (1.0046)	-1.2962 (1.4809)
Dummy of federal government is non-business litigant	-3.4255 (1.3501)	0.8048 (1.4770)
Dummy of Solicitor General submitted amicus brief in favor business petitioner	0.4107 (1.4728)	3.9246 (1.3854)
Dummy of Solicitor General submitted amicus brief in favor non-business petitioner	-8.8758 (2.7223)	-2.3508 (2.3761)
Dummy of Solicitor General submitted amicus brief in favor business respondent	4.9079 (2.8453)	2.3607 (2.0504)
Dummy of Solicitor General submitted amicus brief in favor non-business respondent	-6.1006 (1.7604)	-2.6100 (1.5831)
Dummy of Econ Topic	-1.1574 (0.8247)	1.0085 (0.9848)

Note: The models are estimated by mixed-logit based on 150 halton draws. Justices included in the estimations are: A. M. Kennedy, A. Scalia, C. Thomas, D. H. Souter, J. P. Stevens, R. B. Ginsburg and S. G. Breyer.

Appendix Table 4. Robustness Checks of adding case topic and lower court fixed effects: Joint Estimation of Mixed-Logit Case Outcome Model and Probit Case Selection Model (The selection model is estimated on Bloomberg subsample)

Variables	(1) Mixed logit with control for sample selection on sub-sample of Rehnquist's court	(2) Mixed logit with control for sample selection on sub-sample of Roberts' court
Constant	4.4045 (2.7764)	2.8191 (2.1400)
Mean of Liberal ideology dummy	-1.0040 (0.6013)	-5.1686 (1.2534)
Standard deviation of conservative/moderate ideology dummy	8.6551 (1.6164)	9.5883 (2.1310)
Standard deviation of liberal ideology dummy	5.9190 (0.9341)	2.3038 (0.6250)
Correlation between conservative/moderate and liberal ideology dummy	0.7825 (0.0435)	0.8140 (0.1277)
Correlation between selection error and conservative/moderate ideology dummy	0.0448 (0.0617)	-0.4142 (0.1188)
Correlation between selection error and liberal ideology dummy	-0.0587 (0.0832)	0.1221 (0.2710)
Dummy of lower court ruled in favor of business	-2.1376 (0.9353)	-2.0276 (1.4885)
Dummy of federal government is non-business litigant	-6.6409 (1.4342)	-0.2087 (1.2293)
Dummy of Solicitor General submitted amicus brief in favor business petitioner	-0.3641 (1.0878)	5.4587 (1.3216)
Dummy of Solicitor General submitted amicus brief in favor non-business petitioner	-10.5239 (1.9762)	0.3378 (1.7038)
Dummy of Solicitor General submitted amicus brief in favor business respondent	5.8586 (2.4971)	7.1721 (2.5242)
Dummy of Solicitor General submitted amicus brief in favor non-business respondent	-8.0782 (1.6168)	-0.8091 (1.4355)
Dummy of Econ Topic	-3.2435 (0.9212)	0.1611 (0.9433)
Case topic dummies included?	YES	YES
Lower court dummies included?	YES	YES