Assessing Political Positions of Media*

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Abstract

Although central to understanding the role of the media, few quantitative measures of the political positions of media exist. Collecting and classifying editorials adopted by 23 major U.S. newspapers on 495 Supreme Court cases from 1994-2004, we apply an item response theoretic approach to place newspapers on a substantively meaningful – and long validated – scale of political preferences. Our results provide significant insights into the study of the media. We show that 17 of the 23 papers are more likely to the left of the median Justice for this period, but also find considerable evidence that this may be an artifact of the liberalness of urban, elite, high circulation papers.

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1 The Importance of Assessing the Political Positions of Media

Knowledge about the political positions of media is vital to understanding American politics. While political scientists have provided sophisticated measurements of the ideology of the Presidency, Congress, and the Supreme Court, we have no quantitative measures of the express political positions of the “Fourth Estate.” This lacuna persists despite the fact that considerable evidence points to broad effects on substantive behavior of the media (Gerber et al., 2007; DellaVigna and Kaplan, 2007; Barrett and Barrington, 2005). In addition, while social scientists have purported to measure implicit media bias with varying degrees of success, any measure of implicit media bias should be assessed and understood against express political positions (Kahn and Kenney, 2002; Kull et al., 2003). Such measures are also central to legal questions of federal media diversity regulation (Federal Communications Commission, 2003; Klinenberg, 2007; Pritchard, 2001; Prometheus Radio Project v. FCC, 373 F.3d 372 (3d Cir. 2004)), economic analyses of the industrial organization of media markets (Hamilton, 2004; Mullainathan and Shleifer, 2005; Sutter, 2001), and research on the impact of media on substantive outcomes (Mullen et al., 1986; Bartels, 1993). And as a purely practical matter, such measurements may plainly inform the sophisticated public consumption of media. In this paper, we capitalize on rapid advances in statistical measurement techniques to provide a measure of the political positions of 23 major U.S. newspapers. We show how these measures shed substantial light on the study of the Fourth Estate, placing its study on firm empirical grounds.

2 Our Approach

Given the rapid advancement in our understanding of express policy preferences of congressmembers, judges, and presidents, it may be puzzling why such measures do not yet exist for media outlets. After all, the media play a central role in the political, legal, and economic system. Yet estimating the political positions of media is plagued with challenges beyond those in estimating ideal points for governmental actors. Newspapers, television stations, and radio talk show hosts...
do not cast votes in directly observable ways. Radio and television stations typically do not even endorse political candidates; and while newspapers endorse candidates, such endorsements provide only sparse information about underlying political preferences. Media differences in tone, emphasis, and coverage are difficult to measure meaningfully, and such differences may diverge considerably from the express political positions of media outlets. Content analysis, the detailed analysis of news segments, offers a way forward, but is expensive, difficult to design in a transparent way, and potentially prone to coding errors. While industry survey evidence sheds light on the individual political preferences of journalists and editors, we do not observe how such preferences are filtered, expressed, and aggregated in the institutional context of media outlets. The longstanding challenge then remains of how one can infer express political positions of media outlets in meaningful ways.

Our approach to this measurement challenge is to capitalize on the unique bridge that newspaper editorials serve to specific decisions of governmental actors. The large majority of editorials are purposely written to take an explicit position supporting or opposing some governmental decision. We can conceive of such editorials as “votes” on the same issue facing the governmental decision-makers in question. Combining this insight with well-developed statistical methods in ideal point estimation then allows us to jointly analyze governmental actors and newspaper editorial boards, placing newspapers on a long-validated, substantively meaningful, and transparent scale of political preferences.

To our knowledge, no extant study has taken this approach to study the media. Our work nonetheless is directly related and contributes to two broader areas of scholarship. First, our work pertains directly to the scholarly literature on measuring policy preferences [Poole and Rosenthal, 1985, 1991, 1997; Heckman and Snyder, 1997; Martin and Quinn, 2002; Clinton et al., 2004; Bafumi et al., 2005; Bailey and Chang, 2001] and Bailey (2007), for example, estimates common space scores for Presidents, Senators, and Justices based on “bridging” positions by the President on Supreme Court cases and Senate roll calls. Using the same approach, Bailey et al. (2005) places the

\footnote{In the seminal work, Poole and Rosenthal (1997, p. 183) suggests a comparable approach using legislative roll calls, given that newspapers when adopting express positions on legislative votes “are effectively voting on roll calls.”}
Solicitor-General on the same scale as the Supreme Court Justices. We similarly use editorials for which we observe positions of both newspapers and the Justices as institutional bridges. Relatedly, Segal and Cover (1989) (see also Zorn and Caldeira (2006)) codes New York Times, Washington Post, Chicago Tribune, and Los Angeles Times editorials written about the Justices from the time of nomination until confirmation to derive exogenous estimates of judicial ideology. Our study endogenizes the positions of newspapers, placing them, for the first time, on an express common space.

Second, our study contributes to the study of the media generally, and specifically to the emerging literature in quantitative assessments of (implicit) media bias. Groseclose and Milyo (2005) ("GM") estimates media outlet ideal points by examining think tank citations of legislators and media outlets. Assuming the same utility function of a congressmember’s citation of think tanks on the floor and a newspaper’s citation of think tanks in news stories (not editorials), GM derives interest group (Americans for Democratic Action, ADA) scores of liberalism of media outlets. Comparing these scores to the median voter, GM concludes that there is “strong liberal bias” in news coverage, with the remarkable finding that 18 of 20 major news outlets studied are to the left of the estimated median voter. In a similar approach, Gentzkow and Shapiro (2006) uses the partisan correlation of two- and three-word phrases in the congressional record to estimate newspaper slant. It finds that consumer preferences explain more of the slant variation than newspaper ownership. Ansolabehere et al. (2003), examining five top papers in the 1996, 1998, and 2000 election cycles, studies campaign finance news reporting and finds that newspapers systematically report the most expensive elections and focus on organizational donors to the exclusion of individual donors. Lastly, Lott and Hassett (2004) examines headlines associated with monthly reports of economic data (durable goods, GDP, retail sales, and unemployment) in newspapers from 1991-2004, finding that Democratic Presidents received more favorable news coverage than Republican Presidents for GDP and durable goods news.

Unlike these studies, we do not focus on implicit media bias. Nonetheless,
our work directly contributes to the understanding of implicit media bias, as we illustrate below. If implicit media bias is a function of the permeability of the “wall” between news and editorial boards, implicit media bias measures should be attenuated versions of our measures. As we show below, our measures in fact provide substantial validation for certain implicit media bias measures, suggesting that the news-editorial wall may not hermetically seal the political preferences of the board.

We proceed below by applying item response theory (IRT) to analyze editorials and Supreme Court decisions from the last natural Rehnquist Court (1994-2004).

Our approach has considerable benefits. Chiefly, we provide directly and substantively interpretable scores of media political positions by anchoring them to well-established and long-validated descriptive measurements of judicial ideology. Our statistical approach also capitalizes on methods that are well-studied in political science, psychometrics, and educational testing, and, contrary to conventional content analyses, does not require making difficult substantive coding decisions. Practically, this research design thereby saves time and increases measurement reliability. Contrary to extant media analyses, our approach also does not require that cases be counted equally. Content analyses, which count “liberal” and “conservative” editorials or “positive” and “negative” news coverage, generally weigh units equally. In contrast, our (IRT-based) approach directly incorporates differences across units of analysis (cases) and properly estimates empirically how much information each provides about the political positions of media. We therefore adapt the strengths of IRT methods to directly measure, quantify, and compare newspaper political position, accounting for statistical uncertainty in positions, cases, and media outlets.

The substantive payoff to our approach is that we can answer a host of questions that to date have been challenging to address: What is the most liberal or conservative newspaper? Do most major newspapers really lean to the left? What is the probability that the Washington Post is to the right of the New York Times? How do particular newspapers compare with particular Justices? What is the distribution of political positions among a well-defined set of newspapers?
Do the political positions of newspapers correlate with market demographics? Do newspapers owned by conglomerates exhibit less viewpoint diversity, as some ownership regulations presume? Such answers advance our understanding of the media considerably.

Our paper proceeds as follows. Section 3 outlines our data collection procedure. Section 4 presents results from our estimates of newspaper political positions, demonstrating how our measures correlate with extant implicit media bias measures and market characteristics. We also show how our measures provides significant insight into studies of media bias. Section 5 discusses implications, potential limitations, and extensions of our approach, and Section 6 concludes.

3 Data

We focus on editorial treatment of the U.S. Supreme Court for several reasons. First, the Supreme Court is a decision-making body that is characterized relatively well by a single underlying dimension (Martin and Quinn, 2002; Grofman and Brazill, 2002). Our approach can, of course, easily incorporate additional dimensions, but most media research – as well as research on the court – has tended to focus on a single liberal/conservative dimension to characterize newspapers (e.g., Alterman, 2003; Hamilton, 2004). Second, the extreme actors in the space (Justices Stevens and Thomas) serve as good “anchors” to fix the dimension. Third, contrary to editorials staking out positions on larger policy debates (e.g., welfare reform or the war in Iraq), editorials on the court stake out opinions on multiple, discrete Supreme Court decisions. As a result we gain significant information about newspapers from each unique editorial position. Fourth, much of what the public learns about the Court comes from media outlets interpreting the decisions and workings of the Court (Davis, 1994), so these editorials themselves shed considerable light on the public’s understanding of the Court. Lastly, while one might alternatively focus on editorials about legislative roll calls, Supreme Court editorials have the pragmatic advantages of (a) allowing us to match the specific reasoning of editorials with discrete sets of published court opinions and voting blocks, and (b) providing significant variation beyond party-line votes (i.e., substantial variation.
in moderate policy space). The richness of Supreme Court editorials is therefore ideally suited to estimate political positions of newspapers. We proceed to outline below our selection criteria for newspapers, court terms, and cases, as well as our collection of editorials. Appendix A provides further details about the precise data collection procedure and coding protocol employed.

3.1 Selecting Newspapers

To proceed, we selected high circulation newspapers, adding several smaller newspapers to provide reasonable geographic coverage of major U.S. regions. Our dataset contains 17 of the top 20 circulation newspapers. For comparability with extant studies and to ensure some separation between papers we also included the *Washington Times* and the *Investor’s Business Daily*. Our dataset then covers 23 newspapers, summarized on Figure 1. The second column of Figure 1 denotes the newspaper abbreviation we use for convenience for the rest of the paper. The first panel of Figure 1 presents 2004 circulation statistics, showing that there is a sharp drop-off as we proceed down the list. Just over 2 million people read the *Wall Street Journal* and *USA Today* in 2004, almost twice as many readers as for the *New York Times*.

3.2 Selecting Court Terms and Cases

We define our observation period as the last natural Rehnquist court, 1994–2004. This period, representing the longest natural court in U.S. history, is ideally suited for our study because ideal points of the Justices, as well as the caseload, are remarkably stable over this time period and Lexis provides full coverage for most newspapers during this period. We study all 495 non-unanimous cases resulting in written opinions during this period, using the same selection criteria as Martin and Quinn (2002). Using the Supreme Court Database, each Justice is recorded as having voted for the majority or the minority, which we seek to match with newspaper positions.

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3 The three top 20 newspapers which we did not examine are the *New York Daily News*, *Newark Star Ledger*, and *Newsday*, due to the heavy northeastern bias of the top 20 papers.

4 In the process, we discovered one case, *University of Alabama v. Garrett*, 531 U.S. 356 (2001), which should be included in the U.S. Supreme Court Database, but contained one small coding error by which it would conventionally be excluded.

5 Unfortunately, the Supreme Court Database does not collect much more finegrained information on concurrences and partial dissents. The large majority of editorials, however, do not draw nuanced distinctions between multiple
Figure 1: Newspapers in sample, sorted by circulation. Code refers to abbreviation. Observation period indicates the years available and searched for each newspaper. Number of editorials indicates the number of editorials on Supreme Court decisions collected from 1994-2004. Newspapers for which Lexis coverage is limited are the \textit{New York Post} (available starting 1997), the \textit{Investor’s Business Daily} (available starting 1998), the \textit{Arizona Republic} (available starting 1999), and the \textit{San Diego Union Tribune} (available starting 2000, but available from 1983 on America’s Newspapers). The \textit{Philadelphia Inquirer}, \textit{Miami Herald}, and \textit{Rocky Mountain News} were not available on Lexis at the time of research. We obtained direct access from the editors for the former, and access via America’s Newspapers for the latter two.

The left panel of Figure 2 plots the distribution of cases across issue areas. Roughly 3 in 10 cases in our sample primarily involve an issue of criminal procedure and 1 in 6 cases primarily involves civil rights. The right panel of Figure 2 plots the number of (nonunanimous) cases for each term. The number of cases is quite stable, ranging from 41 cases decided in the 2003 term to 48 cases decided in the 1994 term. The second panel of Figure 1 plots the observation period for each newspaper, stemming from the availability of newspapers on Lexis and America’s Newspapers. Save for three newspapers, we searched all 495 cases. Cases were randomly sorted in order to eliminate any systematic bias in data collection.

As is standard in the literature, we exclude unanimous cases, which is justified on several grounds. First, unanimous cases contain no information to distinguish newspapers unless the paper disagrees with each of the nine Justices. While we have found numerous editorials on 9-0 decisions, only one so far has outright disagreed with the majority. Second, there are strong reasons to
believe that very few newspapers write editorials on unanimous cases (Greenhouse, 1996), meaning that we learn virtually nothing at the expense of doubling search costs. As Figure 3 shows, the likelihood of an editorial on a case increases dramatically for close cases. Each panel plots the proportion of cases on which an editorial is written on the y-axis against the number of votes by which the majority prevailed on the x-axis. The top row plots these relationships for liberal newspapers (i.e., newspapers we later estimate to be left of the median) and the bottom row plots these for conservative newspapers (i.e., newspapers we later estimate to be right of the median). The left panels present results for all cases, while the middle and right panels split the cases by those with liberal and conservative outcomes (again estimated from our model as described below), respectively. The area of each point is weighted by the number of cases searched. As the panels clearly demonstrate, the likelihood of an editorial appearing on an 8-1 or 8-0 decision is low, compared to high coverage proportions for 5-4 cases.

### 3.3 Collecting Editorials

As we are interested in the express political position of each newspaper, we focus on unsigned editorials adopted by the full editorial board for each newspaper. We exclude all news articles, due to the fact only a minuscule fraction of cases is decided by fewer than 9 Justices, we pool majority margins of 2-3 votes (i.e., 6-3 and 5-3 decisions), 4-5 votes (i.e., 7-2 and 6-2 decisions), and 6-7 votes (i.e., 8-1 and 7-1 decisions).
Figure 3: This figure plots the proportion of cases covered by newspapers on the y-axis against the vote margin of the majority decision on the x-axis. The areas of the proportions are weighted by sample sizes. Top panels plot relationship for liberal newspapers (where $\phi < \text{median}(\phi)$) and bottom panels for conservative newspapers (where $\phi \geq \text{median}(\phi)$). The left panels plot the relationship for all cases; the middle panels plot the relationship for cases with “liberal” outcomes; and the right panels plot the relationship for cases with “conservative” outcomes, where the outcome is assumed to be liberal (conservative) when the posterior median of $\beta < 0$ (see Appendix B).

signed columns, letters to the editor, and contributed op-eds. To collect all editorials written about 495 cases by 23 newspapers, we assembled and trained a team of 12 law and undergraduate students at Harvard and Stanford to perform advanced Lexis-based searches for every case. To ensure that no editorials were missed, we conducted multiple search strings, each explicitly overinclusive, for every case within a time window of 10-14 days after each case was decided. For example, for the *New York Times* we ran on average 3-4 search strings (for a total of 1500-2000 searches), reading through each of the results to verify whether an editorial was written. We verified that an editorial was not written by effectively scanning through all results on the editorial pages within our time window.

To code editorials, we read and coded the editorials as clearly agreeing with the majority, clearly
disagreeing with the majority, or as ambiguous in terms of the newspaper’s position on the merits of the case. We personally read each of the 1397 editorials discussing any deviations in coding choices with student coders. Appendix A provides more detail on the coding criteria. The right panel in Figure 1 shows how many editorials we located for each paper. Considerable variation in editorial coverage exists. For example, the Minneapolis Star Tribune devoted an editorial to roughly 5% of cases, compared to roughly 26% by the New York Times and Washington Post. Our statistical framework, which we now turn to, directly takes such variation into account.

4 A New Measurement of Newspaper Ideology

As noted above, we use standard ideal point estimation techniques to put newspapers and Supreme Court Justices on a common scale. In essence, our approach is to augment the Justices by cases vote matrix with the “votes” of the newspapers on these same cases, and to then fit a standard ideal point model to this augmented vote matrix. All votes are treated as probabilistic and repeated indicators of underlying ideal points. Appendix B provides full details.

Unlike manual content analyses that count editorials as being either liberal or conservative and then tally the fraction of liberal or conservative editorials for each news outlet, our model-based method weights editorials by the amount of information they provide about the underlying positions of Justices and newspapers. The scale and weights are estimated empirically based on voting patterns, assuming that Justices Stevens and Thomas are on opposite sides of the scale. For instance, an editorial siding with the five-Justice majority in Granholm v. Heald, 544 U.S. 460 (2005), will provide less information than an editorial that agrees with the five-Justice majority in Grutter v. Bollinger, 539 U.S. 306 (2003). The reason is that the Granholm majority (Justices Scalia, Kennedy, Souter, Ginsburg, and Breyer) was much less cohesive – and much more unusual – compared to other votes than the Grutter majority (Justices Stevens, O’Connor, Souter, Ginsburg, and Breyer). Similarly, siding with a sole dissent by Justice Thomas is a much stronger indication.

7To be precise, the units are editorial-case positions. During the end of the term, as the court issues multiple decisions, some newspapers write editorials taking positions on multiple cases.
Figure 4: Illustration of IRT method for three cases. Each panel plots actual “votes” of Justices and newspapers on a case with estimated political position on the $x$-axis and case-specific predicted probability of a vote for the majority on the $y$-axis. The left panel presents a case with a conservative outcome that discriminates very well between actors; the second panel presents a case with a liberal outcome that discriminates very well between actors; the third panel presents a case that does not discriminate well between actors. Horizontal positions of labels and vertical positions of dots are randomly jittered for visibility.

of an underlying conservative viewpoint than siding with a \textit{relatively} conservative majority position from which only Justice Stevens dissented.

Finally, since we only code whether a newspaper clearly supported either the majority or minority position we never have to worry directly about making value judgments about what constitutes a conservative or liberal position across multiple areas of law. Such outcomes are empirically estimated. This is consistent with extant work that attempts to measure judicial ideology \cite{martin2002} and makes it possible for the coding to be done quickly and reliably.

Figure 4 illustrates the intuition by plotting the “votes” and fitted probabilities of voting for the majority on the $y$-axis against the estimated (median) ideal point of Justices and newspapers on the $x$-axis. The left panel plots \textit{Boy Scouts of America v. Dale}, 530 U.S. 640 (2000), a case estimated to be decided in a conservative direction, for which votes for the Justices and newspapers load cleanly onto the latent political dimension. The second panel presents \textit{Grutter}, for which the probability curve is reversed, as the majority reached what is estimated to be a liberal outcome. The third panel illustrates that in \textit{United States v. Winstar}, 518 U.S. 839 (1996), votes do not load cleanly onto the latent political dimension, with a relatively flat slope in the probability curve. The
fact that these methods fit a slope and intercept term for every case makes them relatively flexible. Along with ideal point estimates for 9 Justices and 23 papers, we estimate 1022 parameters. Further details appear in Appendix B.

To be clear, we aim only to recover express newspaper preferences revealed in the editorial pages. Since newspapers choose cases for editorial treatment, one might wonder whether a type of selection bias affects our results. For example, one might argue that the San Francisco Chronicle rarely writes editorials on cases with an 8-1 conservative decision, but surely the editorial board disagrees with these decisions. Since there is not a recorded vote for the Chronicle, the argument goes, the estimate of the Chronicle’s position may too moderate. This argument rests on one testable assertion (the Chronicle rarely writes on 8-1 conservative decisions), one assertion that with available data is not directly – but is in principle – testable (the Chronicle editorial board disagrees with the ruling), and a presumption that we seek to uncover “true” underlying policy preferences of newspapers. While it is the case that the Chronicle rarely writes on 8-1 conservative decisions (see Figure 3) and it may be the case that the editorial board disagrees with the ruling, we seek to estimate the political position publicly espoused by the paper on its editorial page. Our method is qualitatively similar to, but formalizes systematically, the judgment a reader would form about the politics of a newspaper if she were to read all editorials of 23 newspapers, as well as majority and minority opinions on 495 Supreme Court cases. Much the same as roll call analyses of the U.S. House and Senate recover the revealed preferences of legislators, we recover express political positions of newspapers.

4.1 Political Positions of Newspapers

Fitting the ideal point model to the augmented vote matrix described in the previous section provides us with estimates of the political positions of major newspaper editorial boards and Supreme Court Justices that are on a common scale. Figure 5 presents our main results. The left panel plots posterior medians of ideal points with 60% and 95% credible intervals, sorted from
Figure 5: IRT estimates. The left panel plots ideal point estimates from a standard 2 parameter IRT model with probit link using 495 nonunanimous cases from 1994-2004 augmented by newspaper positions. The model is identified by constraining the ideal point for Justice Thomas to be positive and for Justice Stevens to be negative. The Justices are plotted for substantive reference, and newspapers are denoted in red. 60% and 95% credible intervals are plotted in thick and thin lines, respectively. The right panel plots posterior rank probabilities for newspapers, where ranks are from most liberal to most conservative.

At first blush, our results are consistent with general perceptions. Newspapers commonly viewed as leaning to the left are, in fact, on the left-hand-side of the scale, while newspapers generally believed to be rightward leaning are located on the right of our scale. But our approach also permits us to draw inferences with considerably more precision than general statements of whether a paper is liberal or conservative. The lower left corner of the right panel, for example, indicates that there is a greater than 60% chance that the New York Times is the most liberal newspaper amongst all papers examined. Moreover, our approach allows us to concretely fix ideas of how liberal “liberal” is. The two most liberal newspapers (the New York Times and the Detroit Free Press),
for example, are estimated to be on either side of this natural court’s most liberal member—Justice Stevens. The two most conservative newspapers (the *New York Post* and *Investor’s Business Daily*) are just to the left of Justices Scalia and Thomas.

In addition, we can compare papers in a way previously impossible with any degree of precision. The probability that the *Washington Post* is more conservative than the *New York Times* is effectively 1; and there’s a roughly 88% probability that the *San Francisco Chronicle* is more liberal than the *Boston Globe*. Surprisingly, the *New York Post* is noticeably more conservative than the *Wall Street Journal* (probability=0.79). We speculate that if Rupert Murdoch’s takeover bid of Dow Jones & Company succeeds the *Wall Street Journal* may well advocate more conservative positions than it currently does.

Central to the study of media bias, and motivating a great deal of research, is the question whether top newspapers are politically skewed (e.g., Groeling and Kernell, 1998; Ansolabehere et al., 2003; Groseclose and Milyo, 2005; Gentzkow and Shapiro, 2006; Puglisi, 2006; Haider-Markel et al., 2006). While we do not purport to measure implicit bias, our measurement strategy does allow us to speak to the general question of media bias. If it is the case that the implicit political positions of newspapers are essentially the explicit positions of these newspapers attenuated back toward the midpoint, then two conclusions follow. First, the dispersion of implicit positions will be lower than that of the explicit positions we recover here. Second, papers with implicit positions to the left (right) of the midpoint will also have explicit positions to the left (right) of the midpoint.

Obviously both of these conclusions are conditional on the newspapers in the dataset. As pointed out above, one needs to carefully define targets of inference if one is to make any headway at all. In what follows we look at the newspapers that are close to the largest 20 newspapers in the country. More specifically we exclude the *Investor’s Business Daily* and the *Washington Times* from the analysis, as they were included in the dataset despite their relatively low circulation figures.

Figure 6 plots the density of political positions of these newspapers in the top panel, adding
Figure 6: Density of political positions of newspapers in our study excluding Investor’s Business Daily and the Washington Times. These papers were excluded because they were the only papers whose circulation figures were well below that of the top 20 papers. The median positions of the Justices have been superimposed for comparison in the bottom panel. The salmon colored density presents the unweighted density, whereas the blue line presents the density weighted by circulation. The rightward bump in the weighted density represents the Wall Street Journal. Both densities are slightly “off-center” from the origin, lending some credence to assertions of liberal media bias. By and large, however, political positions tend towards the “center”, though with positive support throughout the space as defined by the Justices. Calculating the expected fraction of newspaper positions that are between the positions of Justices Kennedy and Breyer (the Justices on either side of the median Justice) we find that 53% of the 21 papers are within this interval. If we include the Investor’s Business Daily and the Washington Times this figure drops to 49%. In either case, roughly half of the papers in our study have express positions located between the 4th and 6th Justices. The other interesting feature of the density in Figure 6 is multimodality. In essence, there appear to be four clusters of newspaper positions corresponding to moderate and more extreme liberal and conservative positions. Of particular interest is the fact that even the more moderate papers cleave into left-leaning and right-leaning variants.
Figure 7: The posterior probability that each newspaper is more conservative than Justices O’Connor (left) or Breyer (right). Red colors indicate that the papers were included in Groseclose & Milyo. Dot size is proportional to circulation.

Of course, determining the center is a difficult venture. Groseclose and Milyo (2005), to which we speak more directly below, exerts substantial effort in calibrating the median voter to ADA scores. Our results also allow us to assess how the distribution of political positions compares to meaningful measures of the “center.” To do so, we can rely on Justice O’Connor, well-known as the median Justice during this period. The left panel of Figure 7 plots the probability that each paper is more conservative than Justice O’Connor. The area of each dot is weighted by the number of editorials. Of the 23 papers examined, 17 are more likely to be to the left of Justice O’Connor than to the right. Put differently, the expected fraction of newspapers to the left of Justice O’Connor is 0.75. Excluding the Investor’s Business Daily and the Washington Times, which were included for reasons other than circulation, this expected fraction climbs to 0.82.

Some might interpret this as evidence for liberal media bias. That said, Justice O’Connor may not represent the center of the country. To compare, the right panel plots the probability that each paper is more conservative than Justice Breyer, the next most liberal Justice. Interestingly, the finding now reverses. Of the 23 papers examined, 15 are more likely to be to the right of Justice
Breyer than the left. Seven have a greater than 50% probability of being more liberal. The expected fraction of papers to the right of Justice Breyer with and without the Investor’s Business Daily and the Washington Times is 0.70 and 0.67, respectively. Finally, if we operationalize the “center” as the midpoint between Justices Kennedy and Breyer we find that 0.56 and 0.61 of the papers are to the left of this center point (with and without the Investor’s Business Daily and the Washington Times respectively).

Depending on one’s priors about the Justices, our findings may provide much fodder for findings on media bias.\[8\] Indeed calibrating the center may be possible with further research.

4.2 Do More Elites Subscribe to High Circulation Liberal Newspapers? Evidence from Readership Demographics

While our estimates of newspaper positions are of substantial interest in their own right, we now investigate how these positions relate to characteristics of the newspapers’ markets. At the outset, we caution that the following analysis does not warrant a causal interpretation – newspapers likely cater to particular audiences but may also in turn affect them. Nonetheless, our analysis is descriptively interesting and strongly suggests hypotheses for future study.

Even descriptive inferences are challenging with estimated ideal points. First, since we purposely selected most of the twenty largest papers along with a few other “important” papers we need to be very careful about what population, if any, we would like to extend our inferences to. In what follows, we restrict ourselves to inferences to the 23 newspapers under study during the time period from 1994-2004. In addition, we condition on the observed editorials and Supreme Court opinions throughout the rest of this section. Second, as will become apparent shortly, the data feature several high leverage points and possible outliers. To provide some assurance that our inferences

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\[8\]See Linda Greenhouse, *Telling the Court’s Story: Justice and Journalism at the Supreme Court*, 105 YALE L.J. 1537, 1551 (1996) (asserting that “the Court remains near the center or even slightly left of the center of public opinion on many major issues”) (citing Stuart Taylor, Jr., *Looking Right at the Justices*, LEGAL TIMES, Oct. 2, 1995, at S27, S33). Compare that with Stephen Reinhardt, *The First Amendment: The Supreme Court and the Left—With Friends Like These*, 44 HASTING L.J. 809, 814-816 (1993) (asserting that the court is under the control of a solid conservative bloc of Justices O’Connor, Kennedy, and Souter). Or compare David Bryden, *Is the Rehnquist Court Conservative?*, PUB. INTEREST, Fall 1992, 73, 84 (asserting that “the [court’s] liberal positions on cultural-social issues . . . are the positions of the most powerful elites in the media, academe, and the practicing bar”).
Figure 8: Relationship between logged circulation and newspaper political position. Circulation figures are from *Editor & Publisher Yearbook 2003*. The vertical gray lines represent 95% credible intervals for each paper’s position. The dark red line is a least squares fit to the data and the dark blue line is a robust MM fit to the same data. The thin lines represent measurement uncertainty, plotting least squares and robust MM fits to random posterior draws of paper positions. National newspapers (defined by *Editor & Publisher Yearbook 2003* to be the Investor’s Business Daily, the Wall Street Journal, and USA Today) have been omitted from the right panel.

are not being driven by a small fraction of data points we make use of a robust MM regression estimator (which is designed to be highly resistant to large fractions of contaminated data points while maintaining high efficiency ([Yohai 1987])) as well as the more usual OLS estimator. These MM methods should prove useful for descriptive inference with estimated ideal points generally. Fortunately, in our case, none of our substantive results depend on the choice of regression estimator.

The first relationship we examine is that between circulation and political position. Figure 8 plots our estimates of newspaper position on logged circulation from 2002. We fit both OLS and robust MM regression lines to these data and recover essentially the same negative slope in each case. *Newspapers with higher circulation tend to be more politically liberal.* To get a sense of whether this result holds up when we account for the measurement uncertainty about the political positions we take 500 draws from the joint posterior distribution of the political positions and then repeatedly fit the OLS and MM regression lines to these simulated data. In each case, all 500 of
the slope coefficients were negative. As noted above, these results reflect measurement uncertainty regarding the positions of the 23 newspapers in our dataset.

We conjecture that this relationship will hold up when papers other than the relatively large papers included in our study are analyzed. More specifically, we suspect that smaller papers—typically serving more rural and suburban, and hence Republican readerships—will tend to be more politically conservative than larger (urban) circulation papers.

This has important consequences for studies of media bias. If we are correct, then it would not be surprising to find evidence of a liberal slant if only the top-circulation newspapers are examined (taking Justice O'Connor, for example, to represent the center). Focusing on the largest papers overrepresents newspapers that serve large urban areas—areas in which voters tend to vote overwhelmingly for Democrats.

The second relationship we examine pertains to a resounding theme among commentators that the more liberal segments of the press cater to “elite” elements of U.S. society. To get some sense as to whether more liberal newspapers tend to have more “elite” readers we plot out estimates of newspaper positions on four proxies: (a) percentage of readership with a college degree, (b) percentage of readership with college degree minus percentage of population in market with college degree, (c) percentage of readership with household income greater than $75K, and (d) percentage of readership with household income greater than $75K minus percentage of population in market with household income greater than $75K. Measures (a) and (c) are relatively obvious measures of education and income, while (b) and (d) are measures of relative education and relative income. If more liberal newspapers tend to have wealthier, better-educated readers we would expect to see negative relationships in these four plots.

Looking at Figure 9, we do, in fact, see negative relationships between our four proxies for elitism and newspaper political positions. Accounting for measurement uncertainty in the same manner as in the previous circulation analysis we once again find no evidence that any of these relationships are non-negative. The results should be tempered by the fact that data were not available for at
Figure 9: Relationship between various measures of “elitism” and newspaper political position. Data are from Audit Bureau of Circulations reader profiles. The vertical gray lines represent 95% credible intervals for each paper's position. The thick red line is a least squares fit to the data and the thick blue line is a robust MM fit to the same data. The thin lines represent measurement uncertainty, fitting least squares and robust MM fits to random posterior draws of paper positions. Education and income data were not available for: Investor’s Business Daily, New York Post, Washington Times, Wall Street Journal, and USA Today. RPA stand for “Reader Profile Survey Area” and is the newspapers market.
Figure 10: Comparison of IRT-based scores with Mondo Times and Groseclose & Milyo scores. The top left panel plots ideal point estimates with 95% credible interval against five categorical Mondo ratings, which are jittered for visibility. The top right panel plots 95% contour ellipses for 6 overlapping newspapers with Groseclose & Milyo. The horizontal dashed line presents the median voter as estimated by Groseclose & Milyo and the vertical dashed lines represent the posterior medians for Justices Breyer and O’Connor. With the exception of the Wall Street Journal, the scores correspond quite closely.

least two papers (Investor’s Business Daily and the Wall Street Journal) that we know are fairly conservative and that we suspect have well-educated, high-income readerships.

4.3 Comparison to Extant Measures

We now examine how our measures of explicit political positions compare to extant measures of implicit bias or slant. If we are correct that implicit bias is an attenuated version of explicit positioning then we might expect our estimates of newspaper positions to be monotonically related to measures of implicit bias or slant. Since the underlying scales are not comparable, one should of course not read too much into absolute comparisons. Nonetheless, evidence of a simple monotonic relationship would seem to enhance the validity of our measures as well as the validity of other measures.

Our first comparison is to measures provided by Mondo Times http://www.mondotimes.
com/), an online company which publishes user-ratings of various media outlets in terms of content, political bias, and credibility. Mondo’s political bias rating is on a five-point scale (liberal, leans left, no bias, leans right, conservative). The left panel in Figure 10 plots these Mondo ratings against our estimates for all 23 papers in our study. We see a strong positive relationship between the Mondo measure of conservatism and our measure of conservatism. Two noticeable discrepancies are the New York Times, which is rated as leaning left, and the Investor’s Business Daily, which is rated as having no bias. Yet having read numerous editorials from both papers as well as numerous news articles we are confident that both of these newspapers, at least in terms of express political positions, are relatively more extreme than their Mondo ratings would suggest. In part, the attenuation seen here could reflect the differences between our measure of explicit position and more subtle forms of implicit bias that the Mondo readers are picking up. On the other hand, to our knowledge, Mondo does not adjust for rater-specific effects when calculating their ratings. This could obviously result in biased estimates if there are in fact differences across raters.

One of the strongest pieces of recent work that seeks to measure the implicit slant of a large number of media outlets is Groseclose and Milyo (2005). Six newspapers from our study (the Los Angeles Times, New York Times, USA Today, Wall Street Journal, Washington Post, and Washington Times) are all the newspapers among the numerous media outlets they examine. The right panel of Figure 10 plots GM estimates of implicit bias for these papers on our measures of explicit position. Here we see that, aside from the Wall Street Journal, there is a strong positive relationship between the GM and our estimates. Each of the 95% contour lines intersects with the 45 degree line. With respect to the Wall Street Journal, Groseclose and Milyo (2005) notes that its editorial page is quite conservative, while Gentzkow and Shapiro (2006) finds that news slant is right-leaning. GM goes on to present some evidence supporting their contention that the news and editorial divisions at the Wall Street Journal are more rigidly separated than at most papers and that the news division is much more liberal than the editorial division. Our results here are not necessarily inconsistent with GM. However, we do highlight the fact that, while generally similar,
implicit slant and explicit positioning do seem to differ by varying amounts across papers. The two
types of measures can be mutually informative, and differences between them may prove fruitful
for further research, particularly for understanding of differences across outlets.

4.4 Model Fit and Robustness

To alleviate concerns that our results might be partially driven by misspecification of our mea-
surement model, we now provide a number of diagnostic checks. While no single diagnostic will be
able to expose all potential problems, we offer these methods to help uncover the most likely ones.

One fairly serious problem might be that our model simply does not fit the data very well. As
newspaper editorial boards are to a significant extent untrained in law, they may simply not
operate in any way comparable to Supreme Court Justices. If true, our results could be biased. One
way to assess model fit from a Bayesian perspective is to perform a posterior predictive assessment
(Gelman et al., 1996, 2003; Gelman, 2004). When the model fits the data reasonably well, the
observed data should not appear unusual relative to the posterior predictive distribution of the
data. If the fitted model cannot reproduce datasets that look similar to the observed dataset there
is strong evidence of model misfit.

To carry out such a posterior predictive assessment we generate three vote matrices from the
posterior predictive distribution and plot these next to the observed data matrix. (In practice, we
recommend comparing more draws from the posterior predictive distribution, but we plot three
random draws to illustrate our analysis.) These appear in Figure 11. As we hope, the simulated
data matrices appear quite similar to the observed data. Our model predicts roughly 81% of
newspaper positions correctly, which is comparable to rates for Congress and the Supreme Court.

Second, if the types of cases on which newspapers publish editorials are systematically different
from other cases, estimates from pooling such cases may also be biased. To assess this, we reestimate
the model using only cases on which at least one newspaper published an editorial. The left panel
of Figure 12 plots our pooled estimates on the x-axis to estimates on the subset of cases on the
Figure 11: Posterior predictive checks of IRT model. Cases, Justices, and newspapers are sorted in order from liberal to conservative. Cases without any observed editorials are deleted. The first panel presents the observed vote matrix for the Justices. The second panel presents observed editorial matrix for newspapers. The third, fourth, and fifth panels present posterior simulations of the data conditional on the model. Simulated data appear comparable to observed data, showing good model fit. Roughly 81% of newspaper positions on the merits are correctly predicted.

The estimates are statistically indistinguishable, as seen by the fact that the vertical 95% credible intervals include the 45 degree line, and highly correlated as indicated by $R^2$. Similarly, in the right panel we fit the model by discarding the Justices altogether. This has the downside of failing to substantively anchor our latent scale, but permits us to assess whether the newspaper dimension may differ from that of the Justices. The estimates appear largely invariant to excluding the Justices.

5 Discussion

5.1 What We’ve Learned

In this paper, we have provided a method to measure the explicit political positions of newspapers. Our approach takes advantage of the fact that a newspaper’s editorials are typically written to express the position of the newspaper on particular issues of the day. By linking these statements to observed votes on the merits from 495 Supreme Court cases from 1994 to 2004 we are able to put newspapers on a meaningful scale with interpretable reference points. While distinct from measures of implicit bias or slant, our measures of explicit positions can be used to inform more general studies of media, law, and politics.

Our main findings are threefold. First, most newspapers take political positions that are rela-
Figure 12: Sensitivity analysis of IRT estimates. The left panel plots estimates discarding all cases for which no newspapers write editorials on the y-axis against estimates using all cases on the x-axis. The right panel plots estimates that additionally discard the Justices, fixing the latent dimension by setting the Wall Street Journal to be positive and the New York Times to be negative, on the y-axis and estimates using all cases on the x-axis. All posterior intervals include the 45 degree line, indicating that estimates are insensitive to these sample choices.

We estimate that 53% of the largest 21 newspapers in our dataset take positions between the Justices on either side of the median Justice. Including two small circulation conservative newspapers decreases this percentage to 49%. In either case, about half of the newspapers take relatively moderate positions on issues coming before the Court.

Second, our results directly speak to the question of whether top newspapers are politically skewed. If one thinks of Justice O’Connor, the median Justice, as the center, then one would conclude that most (about 75%) of the papers in our study are to the left of center. On the other hand, if one thinks of Justice Breyer, the Justice immediately to the left of Justice O’Connor, as the center, one would conclude that most (about 70%) of newspapers are to the right of center. Finally, if one thinks of the midpoint between the Justices on either side of the median Justice as the center, one would conclude that the distribution of top newspapers is relatively balanced—at least in aggregate. Clearly, much depends on one’s prior conception of where the political center lies, but our results at least inform the relative assessment.

\[ \hat{\theta} = 0.977 \]

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\[ \hat{\theta} = 0.999 \]
Finally, we show that circulation, income of readers, and education of readers are positively correlated with newspaper liberalism in our sample. Large circulation papers that tend to have more affluent, well-educated readers tend to stake out more liberal political positions. While not surprising when one considers the voting patterns of urban, well-educated, high-income citizens, this finding does have implications for other studies of media bias or media and politics. Neglecting the media outlets serving non-metropolitan areas and making inferences to the country as a whole may well misrepresent relationships between media and politics that are relevant for a very large fraction of the U.S. population.

5.2 Possible Limitations

We note several potential limitations to our approach. First, we examine only express political positions adopted by newspapers. The study of media bias invariably involves a host of other implicit bias in framing, wording, placement, and emphasis, which we do not study. But to the degree that implicit media bias is driven by some permeability between the news and editorial boards, implicit media bias should be a function of our scores. Our approach, therefore, should prove very useful to studies of implicit media bias as a gold standard.

Second, we have limited ourselves only to non-unanimous cases. While Figure 3 provides an empirical justification for this, newspapers may occasionally write editorials and disagree with unanimous decisions by the court. In our study, we have not yet encountered such editorials. To the degree that this happens, our scores would attenuate true political positions, so that the real spectrum of newspaper political positions may span a much larger space than represented by the 9 Justices.

Third, because the latent scale is strictly empirically derived, some might differ on the substantive meaning. For example, the Washington Times is estimated to be slightly left of the Investor’s Business Daily, largely because on some decisions it votes with the more liberal Justices on libertarian grounds.\(^\text{10}\) Substantively, one might consider this case to be evidence that the Washington

\(^{10}\)See, e.g., Atwater v. Lago Vista, 149 L.Ed.2d 549 (2001); Editorial, Soccer Moms Beware, WASH. TIMES, April
Times is in fact more conservative. Yet such substantive coding decisions may be matters more of political philosophy than empirical inquiry, which we view as a virtue of the empirical IRT-based approach.

Fourth, one might worry that political positions of newspapers on Supreme Court cases are orthogonal to other political positions. While possible, our approach offers the empirical first step to testing such a hypothesis. Lastly, the IRT approach as applied to Supreme Court cases is of course a considerable simplification of judicial behavior. Of course, we do not use it here to learn about the Justices, and it remains the state-of-the-art approach to measuring preferences, improves substantially upon prior measures, and summarizes descriptively the positions of the Justices (and now newspapers) in ways consistent with, but with much more precision and rigor than, general perceptions.

6 Conclusion

We conclude by noting that our approach is easily generalizable to study other media outlets, such as magazines, individual editorial writers, and television programs. While not costless in terms of either time or money, it is much more economical than conventional manual content analyses that require a great deal of time and expert involvement. Further, because the underlying coding scheme only requires a relatively simple (and in most cases obvious) choice of “clearly in favor of the majority”, “clearly not in favor of the majority”, or “unclear”, it is much less susceptible to unconscious bias by researchers or coders.

When extended in this way, our results illuminate considerably the recent policy and legal debate about restrictions of common ownership of media outlets. In affirming the FCC’s repeal of newspaper-television cross-ownership rules, the Third Circuit, in an opinion denied cert by the Supreme Court, focused in particular on the lack of empirical evidence as to viewpoint diversity in editorial and news coverage. The court further remanded the new cross-media limits, finding

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11 See Prometheus, 373 F.3d at 399-400 nn.24 & 26.
fault with the Commission’s “diversity index” that attempted to measure the impact of media consolidation on viewpoint diversity. Our approach provides a way forward both with a better assessment and measure of viewpoint diversity.

Lastly, as already noted, our measures of explicit position inform studies of implicit bias or slant. If implicit bias is an attenuated version of explicit position then our estimates can be used to bound quantities relating to implicit bias. For instance, we would expect more than 53% of the 21 largest papers in our study to take implicit positions between Justices Kennedy and Breyer. Of course, this attenuation between the news and editorial boards is an empirical question, one for which we hope to have set a firm empirical foothold in this paper.

\textsuperscript{12} Id. at 403-11.
A Data Collection

We supplied all research assistants (RAs) with (1) the basic vote matrix of 495 cases in the last natural Rehnquist court, including case citations, votes of the Justices, and the term, (2) full text opinions of all 495 cases, including case summaries by Westlaw, (3) full Lexis accounts (i.e., not Academic Universe), enabling them to run Lexis searches for each case. Cases in the vote matrix were randomly ordered, and each RA was typically assigned a block of roughly 100 cases for which to collect editorials. For each case, we searched within a 10-14 day window after a decision was handed down to verify whether an editorial was written. We coded an editorial as 1 if the newspaper agreed with the position of majority on the merits of the case, 0 if the newspaper agreed with the position of the minority, and as missing if no position on the merits was discernible from the editorial or if no editorial was written. Editorials taking positions on multiple cases were included, as long as the position was sufficiently clear. For example, excerpts from the following editorials were coded as 1 (agreeing with the majority):

- “The Supreme Court has upheld an important law that offers victims of torture, genocide, slavery and war crimes worldwide a day in court, and a shot at justice. . . . [I]n its first ruling on the act, the Supreme Court properly sided with the cause of human rights.” Editorial, Human Rights and the Court, N.Y. Times, July 3, 2004, at A14 (opining on Sosa v. Alvarez-Machain, 542 U.S. 692 (2004)).

- “The Supreme Court was right to rule in favor of allowing a Bible-study group to meet at a school after the day’s classes end.” Editorial, Victory for Freedom, ATLANTA J. CONST., June 13, 2001, at 18A (opining on Good News Club v. Milford Cent. Sch., 533 U.S. 98 (2001)).

Excerpts from the following editorials would be coded as a 0 (disagreeing with the majority):

- “Legends Arnold Palmer and Jack Nicklaus are wrong, according to the U.S. Supreme Court. Walking is not, seven justices decreed on Tuesday, an essential part of professional golf. . . . [T]he Supreme Court’s intervention in this matter is absurdly overreaching and arrogant.” Editorial, A Good Walk Spoiled, INVESTOR’S BUS. DAILY, May 30, 2001, at A18 (opining on PGA Tour v. Martin, 532 U.S. 661 (2001)).

- “[T]he high court still has . . . dealt a bitter blow to cherished property rights with its ruling. In saying it’s OK for the City of New London, Conn., to have a ‘distressed’ residential area privately redeveloped, over the protest of homeowners standing by their Fifth Amendment rights and rejecting the compensation offered them, the court also cast a chill over people’s security.” Editorial, Property Ruling Casts Chill over Underdogs’ Security, CHI. SUN-TIMES, June 27, 2005, at 41 (opining on Kelo v. City of New London, 545 U.S. 469 (2005)).

And excerpts from the following editorials would be coded as missing:

- “The Supreme Court’s split decision on attorney-client confidentiality and Vincent Foster’s notes was indeed an issue on which reasonable people could disagree. Overturning the privilege, establishing a precedent not only for Presidents but ordinary citizens, was a step not to be taken lightly.” Editorial, Asides: Foster’s Notes, WALL ST. J., June 26, 1998, at A14 (opining on Swidler & Berlin v. United States, 524 U.S. 399 (1998)).

- “The U.S. Supreme Court, in one of its final rulings of the year, declined to deal with a case concerning a suit against Nike Inc., instead sending the matter back to a San Francisco courtroom. . . . No matter what jurors in San Francisco decide about Nike’s labor practices, the courts must reaffirm the distinction between commercial speech and constitutionally protected
Due to the possibility of votes on some cases as having disparate influence on ideal points (e.g., a “0” on an 8-1 decision), we erred in favor of coding a case opinion as missing in the case of any ambiguity. Take, for example, the Cleveland Plain Dealer’s editorial on Gonzales v. Raich, 545 U.S. 1 (2005), where the Supreme Court struck down a commerce clause challenge to federal marijuana regulation under the Compassionate Use Act. The CPD argued, “In every state where a medical marijuana option has been presented to voters, it has won – usually decisively. Congress should heed this message.” While the CPD would appear to side with the minority in terms of the policy outcome of the case, the assertion that Congress should pay attention to state popular votes appears to assume the answer to the merits question of the case (congressional authority under the commerce clause). When editorials presented such ambiguities – e.g., seemingly assuming that the majority’s decision on the merits is correct, but disagreeing with the policy outcome – we coded them as missing opinions.

B Statistical Methods

The statistical model that we use to infer media positions is a simple two-parameter item response theory (IRT) model with probit link. Clinton et al. (2004) apply such a model to congressional roll call data and show how it relates to an underlying model of spatial voting and previous ideal point estimation techniques (Heckman and Snyder [1997], Poole and Rosenthal [1985], [1991], [1997]). This model is a limiting case of the model of Martin and Quinn (2002). Martin and Quinn show that such a unidimensional model is both interpretable and statistically reasonable when applied to Supreme Court votes on the merits.

Let $J$ denote the set of Justices in the dataset, $N$ the set of newspapers in the dataset, and $K$ the set of cases in the dataset. In what follows we use $j$, $n$, and $k$ to index Justices, newspapers, and cases respectively.

The observed data consist of the observed votes of the Justices (denoted $Y$) and the editorial positions of the newspapers (denoted $X$). The typical element of $Y$ is coded as:

$$y_{jk} = \begin{cases} 
0 & \text{if } j \text{ is in the minority on case } k \\
1 & \text{if } j \text{ is in the majority on case } k \\
missing & \text{if } j \text{ did not vote on case } k 
\end{cases}$$

Similarly, the typical element of $X$ is coded as:

$$x_{nk} = \begin{cases} 
0 & \text{if } n \text{ clearly took the position of the Court minority on case } k \\
1 & \text{if } n \text{ clearly took the position of the Court majority on case } k \\
missing & \text{if } n \text{ did not take a clear position corresponding to observed judicial votes on case } k 
\end{cases}$$

It will be convenient to define the sets $J_k = \{j \in J : y_{jk} \neq missing\}$ and $N_k = \{n \in N : x_{nk} \neq missing\}$ for all $k \in K$. In words, these are just the sets of Justices and newspapers respectively who took a clear position on case $k$.

We write the sampling density for this model as:

\[ \text{density}(Y, X) = \prod_{k} \prod_{j \in J_k} \prod_{n \in N_k} f_{X}(x_{nk}) \phi_{Y}(y_{jk}) \]

\[ \phi_{Y}(y_{jk}) = \begin{cases} 
\Phi(\alpha_{j} + \beta_{k} y_{jk}) & \text{if } y_{jk} \neq missing \\
\Phi(\alpha_{j}) & \text{if } y_{jk} = missing 
\end{cases} \]

\[ f_{X}(x_{nk}) = \begin{cases} 
\Phi(\alpha_{n} + \beta_{k} x_{nk}) & \text{if } x_{nk} \neq missing \\
\Phi(\alpha_{n}) & \text{if } x_{nk} = missing 
\end{cases} \]

13The Nike case is unique as writ of certiorari was dismissed as improvidently granted, with a written concurrence by Justice Stevens, with whom Justice Ginsburg joined, and with whom Justice Souter joined partially, and dissents by Justices Kennedy, Breyer, and O’Connor. Almost all other cases in our sample are written decisions on the merits.

14Editorial, Marijuana, Medicine and Law, Plain Dealer, June 12, 2005, at H2.
\[ p(X, Y | \alpha, \beta, \theta, \phi) \propto \prod_{k \in K} \left\{ \prod_{j \in J_k} \Phi(-\alpha_k + \beta_k \theta_j)^{y_{jk}} \left[ 1 - \Phi(-\alpha_k + \beta_k \theta_j)^{(1-y_{jk})} \right] \right\} \times \left\{ \prod_{n \in N_k} \Phi(-\alpha_k + \beta_k \phi_n)^{x_{nk}} \left[ 1 - \Phi(-\alpha_k + \beta_k \phi_n)^{(1-x_{nk})} \right] \right\}. \]

The parameters of direct substantive interest for this paper are the \( \phi \)s and, to a somewhat lesser extent, the \( \theta \)s. Here \( \phi_n \) can be interpreted as the political position of newspaper \( n \) and \( \theta_j \) can be interpreted as the political position of Justice \( j \). Note that since \( \alpha_k \) and \( \beta_k \) are constant across all votes and editorials on case \( k \) for all \( k \), the newspaper and Justice ideal points are on the same scale.

Following Clinton et al. (2004) and Martin and Quinn (2002) we take a Bayesian approach. In so doing, we assume the following prior distributions for model parameters:

\[
\alpha_k \overset{iid}{\sim} \mathcal{N}(0, 5), \quad k \in K
\]
\[
\beta_k \overset{iid}{\sim} \mathcal{N}(0, 5), \quad k \in K
\]
\[
\phi_n \overset{iid}{\sim} \mathcal{N}(0, 1), \quad n \in N
\]

and

\[
\theta_j \overset{iid}{\sim} \mathcal{N}(0, 1)
\]

for Justices other than Justices Thomas and Stevens. To identify the model we assume that, a priori, Justice Thomas’s ideal point follows a standard normal distribution truncated below at 0 and that Justice Stevens’s ideal point follows a standard normal distribution truncated above at 0. It is assumed that all parameters are mutually independent a priori.

We fit the model using Markov chain Monte Carlo (MCMC). More specifically, we use the data augmentation approach of Johnson and Albert (1999) (see also Clinton et al. (2004) and Martin and Quinn (2002)). We discard the first 50,000 scans as burn in, and then base inferences on the next 1,000,000 scans. For reasons of space, every 100th scan was saved yielding an MCMC sample of size 10,000 approximately from the posterior distribution of interest. Standard MCMC convergence diagnostics support our choice of run length.
References


