Norman Schofield · Gonzalo Caballero · Daniel Kselman *Editors*

Advances in Political Economy

Institutions, Modelling and Empirical Analysis

This book presents latest research in the field of Political Economy, dealing with the integration of economics and politics and the way institutions affect social decisions. The focus is on innovative topics such as an institutional analysis based on case studies; the influence of activists on political decisions; new techniques for analyzing elections, involving game theory and empirical methods.

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DW-NOMINATE scores against the (district-specific) normalized Democratic vote share in the district in the contemporaneous Presidential election,[18] which we use as an estimate of district ideology. We label this variable the *normalized district Democratic vote proportion for president,* or *district ideology* for short.

   Plots for pooled data over the period 1956–2004 are presented in Fig. 1; plots broken down by time period are shown in Fig. 2. Areas of the figure to the left of the vertical line represent Republican districts, i.e., those in which the district Democratic presidential vote was less than the national Democratic vote, while the areas to the right of it represent Democratic districts. Each curve, one for each party, represents a quadratic regression for that party, in which we regressed the representatives' DW-NOMINATE scores on the normalized district Democratic vote proportion, which we take as a measure of district ideology, *and* on the square of the district ideology; we also included a dummy variable for districts from the South.[19] Thus for each party our specification was:

$$\text{DW-NOMINATE score}_j = b_1 + b_2[\text{District ideology}_j]$$
$$+ b_3[\text{District ideology}_j]^2 + b_4[South], \qquad (1)$$

where

$\text{DW-NOMINATE score}_j$ = representative j's DW-NOMINATE score, based on j's legislative voting record in the two years preceding the election,

$\text{District ideology}_j$ = normalized presidential vote in j's district, as defined in footnote 18,

$[\text{District ideology}_j]^2$ = the square of the normalized presidential vote in j's district,

$South$ = 1 if the district was located in the South, and zero otherwise.

interpretable as the most conservative score and -1 interpreted as the most liberal score. However, some members may have large linear terms so that for some Congresses their coordinates can be greater than $+1/-1$. In our data, there are 12 data points for which the DW-NOMINATE scores are beyond the range of -1 or 1.

[18]Specifically, the normalized Democratic vote proportion for president is equal to district presidential vote share minus the national presidential vote share. For example, if a presidential candidate gets 65 percent in a district, and 60 percent nationally, then the normalized district percent is $65 - 60 = +5$ percent, reflecting the fact that the presidential candidate ran five percentage points ahead of his national average in that district. If the presidential vote share in the district is the same as the national vote, then the normalized district vote is zero percent. Centering the district vote on zero is necessary, as explained in footnote 20 below, in order for the quadratic regressions (described below) to generate informative parameter estimates. Because the mean of the national Democratic presidential vote over the period of the study (49.9 %) is almost exactly 50 percent, we may interpret the zero point of the normalized Democratic vote proportion for president as representing either the mean national presidential vote or as zero deviation from a 50–50 district.

[19]We define the south as Arkansas, Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, and Virginia.

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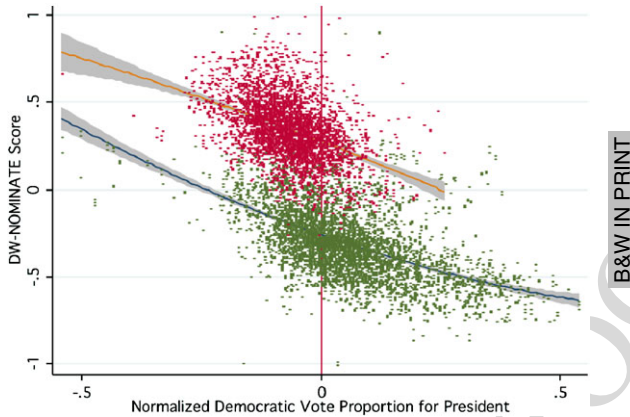375
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Fig. 1 House quadratic relation of DW-NOMINATE scores and partisan distribution by district: 1956–2004. Notes: The plot presents quadratic regression curves for DW-NOMINATE scores versus the normalized Democratic vote proportion for president in the House member's district, which is equal to district Democratic presidential vote share minus the national Democratic presidential vote share (see footnote 12). These regression lines were plotted using the full set of House members' DW-NOMINATE scores over the period 1956–2004; the sample sizes for the regression models are 4,613 for Republicans and 6,161 for Democrats. The *vertical line* at 0.0 represents identical Democratic presidential vote shares at the national and district level. The *shaded regions* around the lines represent 95 percent confidence intervals

Inclusion of the term [District ideology$_j$]^2 in (1) allows us to investigate the possibility of nonlinear effects of district ideology on the House member's DW-NOMINATE score, and to estimate how the degree of ideological dispersion between Republican and Democratic representatives varies with district competitiveness.[20] Table 1 reports these regression coefficients for the U.S. House, and the shaded regions in the figures represent the 95 percent confidence regions for the regressions.[21] As expected, the parameter estimates reported in Table 1 and illustrated in Figs. 1–2 support the expectation that representatives' ideological positions respond to the position of the median voter by district, so that the fitted curve for each party slopes downward (party responsiveness), both for the 1956–2004 period as a

[20]To see why it is necessary to employ a measure of district ideology that is centered on zero in order to estimate informative parameters in (1), note that in a quadratic regression, parameter estimates reflect behavior around the zero point of the independent variable. If we use the actual district vote as our measure of district ideology, then the zero point of this independent variable corresponds to a district where the Democratic candidate received zero percent of the presidential vote, which is outside the range of interest. Under this parameterization, estimates would reflect behavior over an unrealistic region. Using the normalized Democratic vote proportion for president, on the other hand, places the zero value of the independent variable at a district whose presidential vote matches the national presidential vote, focusing attention on behavior around competitive electorates.

[21]For simplicity, the party-specific regression curves and their confidence intervals in the figures are based on the full data set without the breakdown by region.
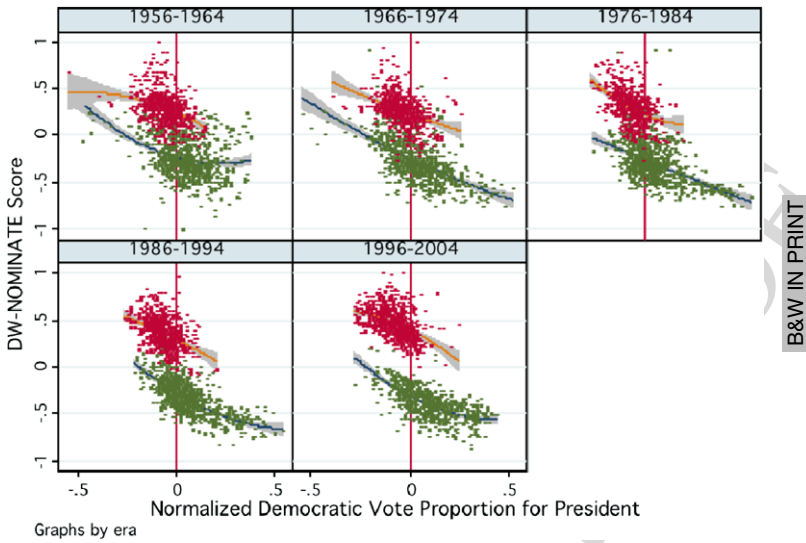
Graphs by era

Fig. 2 Quadratic regression for the presidential vote share and ideology for U.S. House members with data separated by time periods. Notes: These plots present quadratic regression curves for DW-NOMINATE scores versus the normalized Democratic vote proportion for president in the House member's district, which is equal to district Democratic presidential vote share minus the national Democratic presidential vote share (see footnote 12). The data are the same as in Fig. 1, just separated by the eras noted in the figure. The *vertical line* at 0.0 represents identical Democratic presidential vote shares at the national and district level. The *shaded regions* around the lines represent 95 percent confidence intervals

whole (Fig. 1) and for each of the time periods 1956–1964, 1966–1974, 1976–1984, 1986–1994, and 1996–2004 (Fig. 2). All of these downward slopes—for the full period (as well as for each subperiod) and for each party—are statistically significant at the 0.001 level. In addition, note that the downward slopes of these regression lines for both Democrats and Republicans are substantial, suggesting mean *within-party* ideology does vary substantially as a function of the presidential voting patterns in the district. For the analyses pooled over the entire 1956–2004 time period, the estimated parameters on the linear coefficient reported in Table 1 are −0.75 for Democratic representatives and −1.03 for Republican representatives, indicating a downward trend in the DW-NOMINATE score of about one tenth of a unit for each increase of ten percent in the Democratic proportion of the district vote.[22]

On the other hand, if we look at the gap between the two curves, which reflects differences *across party lines*, we find very substantial differences between the win-

[22]These estimates apply to marginal changes in district presidential vote when the Democratic vote share in the district is similar to the national vote (so that the normalized measure of district ideology is near zero), in which case the value of the squared district ideology variable in (1) is negligible. In this range of values the predicted effect of district ideology on representatives' DW-NOMINATE scores is approximately linear.

Table 1 Regression of DW-NOMINATE scores versus partisan distribution of the district: House of representatives

Period	Regression coefficients							
	Democrats				Republicans			
	Intercept	South	Ideology	[Ideology]^2	Intercept	South	Ideology	[Ideology]^2
1956–2004 (full period)	−0.32***	0.19***	−0.75***	0.13*	0.27***	0.06***	−1.03***	−0.54*
	(0.01)	(0.01)	(0.02)	(0.06)	(0.01)	(0.01)	(0.04)	(0.24)
1956–1964	−0.33***	0.30***	−0.36***	0.33*	0.24***	0.06*	−0.91***	−1.11**
	(0.01)	(0.01)	(0.03)	(0.14)	(0.01)	(0.03)	(0.09)	(0.44)
1966–1974	−0.32***	0.24***	−0.64***	−0.22	0.23***	0.01	−0.76***	0.12
	(0.01)	(0.01)	(0.04)	(0.13)	(0.01)	(0.02)	(0.07)	(0.46)
1976–1984	−0.32***	0.21***	−0.86***	0.34	0.20***	0.10***	−1.02***	1.21
	(0.01)	(0.01)	(0.06)	(0.19)	(0.01)	(0.01)	(0.12)	(0.68)
1986–1994	−0.30***	0.07***	−1.17***	0.83***	0.29***	0.03**	−1.03***	−0.56
	(0.01)	(0.01)	(0.05)	(0.17)	(0.01)	(0.01)	(0.10)	(0.61)
1996–2004	−0.33***	0.05***	−1.06***	1.16***	0.39***	0.02	−1.03***	−1.30**
	(0.01)	(0.01)	(0.05)	(0.17)	(0.01)	(0.01)	(0.10)	(0.45)

*Significance at the 0.05 level; **Significance at the 0.01 level; ***Significance at the 0.001 level. Significance levels are 2-sided

The definitions of the independent variables are given in the text. Curvature in the expected direction (i.e., convex for Democrats and concave for Republicans) is significant for both parties for the full period and for the earliest and latest subperiods. Thus, the data offer evidence that the curves either bow outward or may be straight, but the coefficients are never significant in the other direction, i.e., the data offer no significant evidence that any of the partisan curves bow inward. N's for the analyses are as follows: Full period (1956–2004): Democrats 6158, Republicans 4616; 1956–1964 period: Democrats 1304, Republicans 843; 1966–1974 period: Democrats 1254, Republicans 873; 1976–1984 period: Democrats 1323, Republicans 843; 1986–1994 period: Democrats 1243, Republicans 932; 1996–2004 period: Democrats 1034, Republicans 1125

ners from the two parties; for instance the pooled data in Fig. 1 suggests that, on average, a Republican Congressperson from even a 70 percent Democratic district can be expected to be more conservative than a Democratic member from a 30 percent Democratic district. The difference in regression intercepts between Democrats and Republicans indicates the typical difference between the DW-NOMINATE scores of House members of the two major parties when the partisan composition of the district is 50–50. As reported in Table 1, these differences range from 0.52–0.57 DW-NOMINATE units in each of the first three subperiods to 0.72 units in the most recent subperiod 1996–2004, reflecting the increased polarization in the House.[23] Clearly, party has a huge effect relative to that of district ideology.[24] Finally, the positive coefficient estimates on the South dummy variable suggest that—particularly in the earlier time periods—representatives tended to compile more conservative legislative voting records when they were elected from Southern districts, compared to when they were elected from non-Southern districts with similar presidential voting patterns.

So far we have considered what our data implies about House members' responsiveness to district ideology, along with the ideological differences between Democratic and Republican representatives. However our most interesting findings concern how district ideology is related to *partisan divergence*, i.e., the degree of ideological divergence between House members from different parties. As noted above, the conventional wisdom is that partisan divergence will be greatest when the election is not competitive, because in a lopsided district the candidate from the dominant party can move away from either the national or district median and expect to win anyway. Given that districts with highly unequal partisanship are likely to be less competitive in terms of presidential voting, this conventional wisdom implies that we should observe the largest ideological gap between Republican and Democratic representatives in districts that feature lopsided presidential vote margins.

However the curves in Fig. 1, which are fitted to the full 1956–2004 data, do not conform to this pattern: instead they bow out slightly away from each other in the middle of the partisan distribution scale.[25] Note that neither for the full period (1956–2004) nor for any of the five breakdown periods is there evidence that the curve for either party is significantly bowed *inward* at the 0.05 level. By contrast,

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[23]The partisan gaps reported above apply to the reference category, non-South. For the category South, the estimated intercept and parameter estimate for the variable South must be combined, so that the partisan gap in the South ranges from 0.32–0.33 in the first two subperiods to 0.69 in the most recent subperiod.

[24]We note that Ono (2005) obtains similar plots for two Congresses (1969–1970 and 2003–2004) and observes the increasing polarization of the parties in Congress. Similarly, Clinton (2006), using samples that aggregate to over 100,000 voters, finds systematic differences in Republican and Democratic voting behavior in the 106th House (1999–2000) that cannot be entirely accounted for by same-party constituency preferences.

[25]Figure 4 in Butler (2009) appears to suggest this same convexity for Democrats and concavity for Republicans.

positive coefficients on the quadratic term for the Democrats and negative coefficients for the Republicans indicate significant *outward* bowing for both parties for the overall period and for the earliest (1956–1964) and the latest (1996–2004) periods, each at the 0.05 level or better (see Table 1 and Fig. 2).[26] In other words, Republican and Democratic House winners are as different or more so in ideology in the most competitive districts than in un-competitive ones. The outward bowing of the curves is not pronounced; what is remarkable is that the curves do not bow inward, as we would expect if the partisan gap narrowed in competitive districts.

Related plots are obtained by Erikson and Wright (2000). In particular, using the NES seven-point scale for both axes, these authors plot the mean perception of the ideology of incumbent House members during the 1980s against constituency ideology, obtaining as we do a sharp separation between Democrats and Republicans and trends reflecting party responsiveness (Erikson and Wright 2000, Fig. 8.6). The authors' scatter plots for each party appear to show curvature that bows out between the parties, but this possible effect is not noted.[27]

3 Ideological Extremism in the U.S. Senate, 1956–2004, by Party and by Presidential Vote in the State

We replicate the analyses on the House of Representatives, reported above, for the U.S. Senate. We use the vote for president for each quadrennial election as a measure of the underlying partisan support for each state (both for that particular election as well as the midterm election that follows it),[28] and the DW-NOMINATE scores for all senators as a measure of senatorial ideology from each congress. The plots for the regressions are depicted in Fig. 3 (which presents results for the entire 1956–2004 period) and Fig. 4 (which depicts results for the same subperiods used for the

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[26]One explanation for convex curvature of the Democratic scores in the earlier part of the period under study may be that a number of conservative Southern Democrats won uncontested races, causing the quadratic regression curves for Democrats to turn up on the right side of the scale. But controlling for districts in the South as we have done should reduce this effect and, in any event, it cannot explain the pronounced convex curvature for the Democrats in the most recent subperiod.

[27]Erikson and Wright (2000, Fig. 8.1) also plot roll-call ideology based on the ADA/ACA indices for the 1980s against presidential vote, obtaining similar patterns; linear regression results are reported for the period 1976–1996. The authors note that "Districts in the middle are generally represented by relatively moderate Republicans or relatively moderate Democrats," but these authors do not assess the size of the ideologically *gap* between Republicans and Democrats as a function of district ideology. The fact that representatives from competitive districts tend to be more moderate than those from lopsided districts does not imply that the partisan gap between the sets of Republican and Democratic winners in moderate districts is smaller than the corresponding gap for more extreme districts.

[28]As with our analyses of House districts (see footnote 18), for the Senate-based analyses our measure of ideology was the difference between the state's Democratic presidential vote and the national Democratic presidential vote, a measure that is centered on zero.
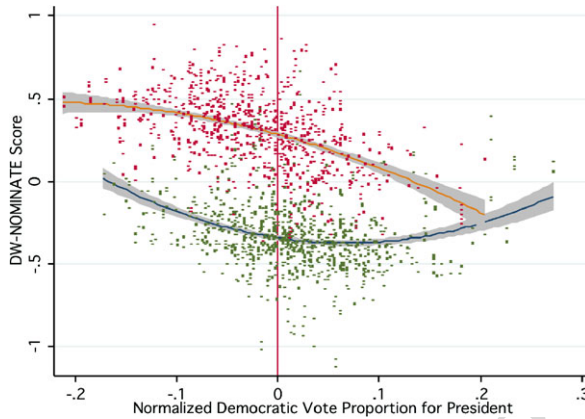
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Fig. 3 Senate quadratic relation of DW-NOMINATE scores and partisan distribution by district: 1956–2004. Notes: The plot presents quadratic regression curves for DW-NOMINATE scores versus the normalized Democratic vote proportion for president in the Senator's state, which is equal to state Democratic presidential vote share minus the national Democratic presidential vote share (see footnote 12). These regression lines were plotted using the full set of Senators' DW-NOMINATE scores over the period 1956–2004; the sample sizes for the regression models are 1335 for Republicans and 1353 for Democrats. The *vertical line* at 0.0 represents identical Democratic presidential vote shares at the national and state level. The *shaded regions* around the lines represent 95 percent confidence intervals

House). Table 2 reports the regression coefficients for the Senate, and the shaded regions in the figures again represent the 95 percent confidence intervals for each regression.

The patterns we estimate for the Senate data are similar to those for the House data. As was the case for the House data, all of the downward, linear slopes—for the full period (as well as for each subperiod) and for each party—are statistically significant, at the 0.05 level; in fact, all except those for the subperiod 1956–1964 are also significant at the 0.001 level. Furthermore, the difference in regression intercepts between Democrats and Republicans, which indicates the typical difference between the DW-NOMINATE scores of Senate members of opposing parties when the partisan composition of the state is competitive, reflects the increasing partisan polarization in the Senate over time: these differences increase from 0.66 DW-NOMINATE units in the first subperiod 1956–1964, to 0.80 units in the most recent subperiod 1996–2004 (see Table 2).

Finally, our estimates on the Senate data again support the proposition that the differences between Democratic and Republican senators' voting records are as great or greater in states that are evenly divided, in partisan terms, than in states that are overwhelmingly democratic or republican: The curves in Fig. 3, which are fitted to the 1956–2004 data, again bow out away from each other in the middle of the state ideology scale, i.e., in states where the presidential vote mirrors the national vote, indicating that Republican and Democratic Senate winners are *as different* (and if anything more different) in ideology in the most competitive states. The evidence for outward bowing is significant at the 0.05 level for both
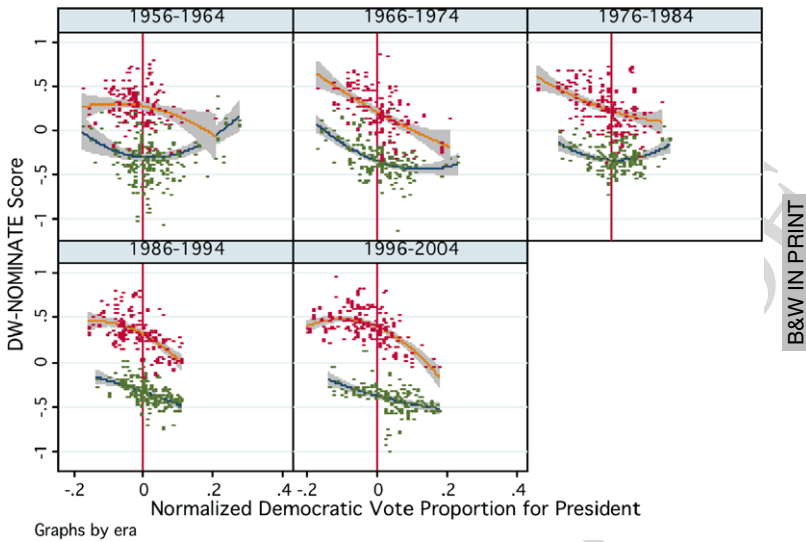
Fig. 4 Quadratic regression for the presidential vote share and ideology for Senators with data separated by time periods. Notes: These plots present quadratic regression curves for DW-NOM-INATE scores versus the normalized Democratic vote proportion for president in the Senator's state, which is equal to state Democratic presidential vote share minus the national Democratic presidential vote share (see footnote 12). The data are the same as in Fig. 3, just separated by the eras noted in the figure. The *vertical line* at 0.0 represents identical Democratic presidential vote shares at the national and state level. The *shaded regions* around the lines represent 95 percent confidence intervals

parties for the full period and for the earliest and latest periods—the same periods that exhibited outward bowing in the House; whereas no curve for either party for either the full period or for any of the breakdown periods bows significantly inward.

4 Discussion

Our findings cast considerable doubt on any simplistic claim that more evenly balanced electoral competition in a district prompts candidate convergence across party lines. Moreover, our substantive conclusions are consistent across the House and Senate, and they largely generalize across time periods. Our findings concerning the partisan ideological gap and party responsiveness to constituency views are, of course, well known, and have been identified using alternative measures of legislative ideology.[29] In particular, we find the expected evidence that elected officials' legislative voting records respond to district ideology, and that Democratic repre-

[29]Restriction of the data to open-seat races changes the pattern only very marginally, with a slight tendency for Republicans to be more moderate in competitive districts. Furthermore, the patterns

Table 2 Regression of DW-NOMINATE scores versus partisan distribution of the State: results for the U.S. Senate

Period	Regression coefficients							
	Democrats				Republicans			
	Intercept	South	Ideology	$[\text{Ideology}]^2$	Intercept	South	Ideology	$[\text{Ideology}]^2$
1956–2004 (full period)	−0.39***	0.26***	−0.66***	4.29***	0.26***	0.16***	−1.57***	−2.30**
	(0.01)	(0.01)	(0.07)	(0.54)	(0.01)	(0.02)	(0.09)	(0.81)
1956–1964	−0.39***	0.39***	−0.49*	3.08*	0.27***	0.26**	−0.72**	−5.02*
	(0.03)	(0.03)	(0.22)	(1.32)	(0.02)	(0.10)	(0.26)	(2.50)
1966–1974	−0.38***	0.23***	−0.62***	2.18*	0.19***	0.19***	−2.05***	1.22
	(0.01)	(0.03)	(0.15)	(1.08)	(0.02)	(0.05)	(0.22)	(2.04)
1976–1984	−0.37***	0.23***	−0.67***	5.50***	0.17***	0.28***	−1.59***	2.86
	(0.01)	(0.02)	(0.11)	(1.14)	(0.02)	(0.03)	(0.21)	(1.80)
1986–1994	−0.36***	0.13***	−1.05***	0.47	0.29***	0.09**	−1.94***	−5.56*
	(0.01)	(0.02)	(0.12)	(1.77)	(0.02)	(0.03)	(0.21)	(2.61)
1996–2004	−0.42***	0.16***	−0.95***	3.45**	0.38***	0.04	−1.63***	−7.48***
	(0.01)	(0.02)	(0.12)	(1.23)	(0.01)	(0.02)	(0.15)	(1.16)

* Significance at the 0.05 level; ** Significance at the 0.01 level; *** Significance at the 0.001 level; Significance levels are 2-sided

The definitions of the independent variables are given in the text. Curvature in the expected direction is significant for both parties for the full period and for the earliest and latest subperiods. Thus, as for the House, the data offer evidence that the curves either bow outward or may be straight, but the coefficients are never significant in the other direction, i.e., there is no evidence that any of the partisan curves bow inward. N's for the analyses are as follows: Full period (1956–2004): Democrats 1353, Republicans 1135; 1956–1964 period: Democrats 314, Republicans 187; 1966–1974 period: Democrats 270, Republicans 205; 1976–1984 period: Democrats 263, Republicans 242; 1986–1994 period: Democrats 272, Republicans 234; 1996–2004 period: Democrats 234, Republicans 267

sentatives are more liberal than Republicans when controlling for district ideology. *But* we find no evidence that the degree of ideological polarization between Democratic and Republican representatives is smallest in the most competitive districts—in fact, if anything, the data suggests the opposite pattern, that over the past fifty years partisan polarization has tended to be as *great or greater* in districts that are most competitive. This latter finding, which we label the *competitive polarization result*, is contrary to the intuition that political competition exerts maximal pressures on politicians to moderate their positions when this competition is most intense, i.e., in highly competitive districts.

Our findings have theoretical, empirical, and practical implications. The practical implication of the competitive polarization result is that it casts doubt on whether using redistricting to draw more competitive districts for members of the House will bring the politics of moderation to Congress. Indeed, our results suggest that Democratic and Republican representatives elected from competitive districts, in terms of the presidential vote, may be even more ideologically polarized relative to each other than when they are elected from districts that are lopsidedly Democratic (or Republican) at the presidential level. We emphasize, however, that our results do not imply that the redesigning of districts to be more competitive would necessarily increase overall polarization in Congress. On the contrary, Democratic and Republican members of Congress in competitive districts, while sharply different from each other, would in most cases be less extremist than those that would have been elected in more lopsided districts, as can be seen in Figs. 1 and 3. Thus, redistricting to produce competitive districts might reduce, not increase, overall polarization.

Theoretically, our competitive polarization result squares with the recent spatial modeling-based arguments of Butler (2009) and Adams et al. (2010), which take account of voters' partisan loyalties and abstention due to alienation. These arguments conclude that, *ceteris paribus*, districts with balanced partisan compositions will motivate maximal policy *divergence* between Democratic and Republican candidates. And, as we have noted above additional theoretical arguments developed by Schofield and Sened (2006), Moon (2004), and Baron (1994) present reasons why candidates who present noncentrist policies that appeal to party supporters, activists, and special interest groups may derive electoral benefits that surpass the benefits that accrue to candidates who appeal to the center of public opinion in their constituency.

Finally, our analyses are relevant to the lively current debate over how political diversity mediates the impact of numerous variables that influence election outcomes, roll call voting, and candidate positioning (e.g., Bond et al. 2001; Koetzle 1998; Jones 2003). With respect to senators' roll call votes on free trade, for instance, Bailey and Brady (1998) find that in demographically homogeneous states

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observed are not likely the result of the particular measure (DW-NOMINATE scores) of ideological voting in the House that we have used. Lee et al. (2004) plot legislative voting records as assessed by NOMINATE scores and by each of fifteen monitoring associations ranging from the liberal American for Democratic Action (ADA) to the conservative League of Conservative Voters (LCV) (against the Democratic vote share in the House election by district). These plots show internal consistency among many different measures of ideological voting in Congress.

constituent preferences are the only factor that exerts statistically significant influences on roll-call votes, while in heterogeneous states constituent preferences are but one of several influences. To the extent that heterogeneous states tend to be more electorally competitive at the presidential level, the Bailey and Brady findings imply that we will observe equal or greater divergence between Democrats' and Republicans' roll-call records in competitive states, than in non-competitive states—a pattern that fits our empirical finding that partisan polarization tends to be as large or larger in competitive districts. And with respect to candidate positioning, Bishin et al. (2006) report empirical analyses that the ideological positions of senate candidates from rival parties were no more similar when these candidates faced off in an election held in a heterogeneous state, than when the election was held in a homogeneous state.[30] This finding is again consistent with our results.

In sum, in this paper we have analyzed how the degree of ideological polarization between the parties in the House and the Senate varies as a function of district ideology, defined in terms of Democratic presidential support in the district. Consistent with previous research, we find that representatives' roll-call voting records reflect their district and their party. However, and we believe of greatest interest, we also find that as great or greater ideological difference between the winners of the two parties occurs in districts that, in presidential support terms, are the most competitive.

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[30]Bishin et al. find that this conclusion holds regardless of whether the state electorate's diversity was measured in terms of demographic characteristics (using the Sullivan index) or in terms of ideological diversity.