ONLINE APPENDIX

for “Voice and Balancing in US Congressional Elections”

by Till Weber, published in *Perspectives on Politics*

Table A1 – Descriptive statistics

Variable	N	Mean	Std.dev.	Min	Max
Party identification	231,846	3.68	2.06	1	7
Liberal-conservative self	208,196	4.27	1.44	1	7
Liberal-conservative Democratic Party	202,458	3.09	1.49	1	7
Liberal-conservative Republican Party	201,537	5.05	1.48	1	7
Voted in election	233,487	0.46	0.50	0	1
Voted for president’s party	155,561	0.50	0.50	0	1
Survey weight	233,487	1.00	1.86	9×10^{-11}	40.20
Midterm	32	0.50	0.51	0	1
President’s term	32	1.34	0.48	1	2
Aggregate turnout of torn partisans	32	54.06	13.73	22.72	87.66
Aggregate in-party support of torn partisans	32	73.43	11.17	48.42	100.00
Gallup estimate of change in two-party vote	16	-3.73	4.11	-13.57	2.84
President’s extremeness	15	0.50	0.14	0.28	0.69
Party polarization	16	0.69	0.12	0.55	0.90
In-party vote of torn partisans in presidential year	16	73.43	11.35	48.42	100.00
Final poll lead of winning presidential candidate	16	8.61	9.72	-3.20	28.00
In-party vote overall in presidential year	16	51.09	3.49	46.05	57.30
Presidential approval	16	51.13	9.37	38.00	65.00
Party valence differential	16	-1.69	15.61	-30.00	23.00

Details of the imputation procedure

Survey data to conduct my analysis are completely available for all Congressional elections since 1972. These ANES/CCES surveys all include vote choice, party identification, the respondent's liberal-conservative position, and their perceptions of the two party positions.[1] Prior to 1972, the ANES did not ask the ideology questions. Vote choice and party ID were included from 1956 on, however. In an attempt to extend the time series, I implemented an imputation procedure that estimates liberal-conservative positions and perceptions for these eight additional elections. The analysis can thus be extended from 12 to 16 electoral cycles.[2]

The imputation is based on micro and macro correlates of ideology. Individual-level variables were selected if present in almost all target surveys (1956-1970) and in a reasonable number of source surveys (post-1970). 21 variables qualified: voted in election (Y/N), vote choice (Dem/Rep), party identification (seven points), interest in election (three points), interest in politics (four points), political knowledge (correct/false), stable party preference (Y/N), attempted to influence vote of others (Y/N), personal economic prospect (three points), external efficacy (three points), social class (six categories), union membership (Y/N), occupation (six

[1] The ANES survey of 2002 did not include party perceptions. These were obtained from panel data covering the same respondents in the preceding election (ANES 2000-2004 Merged File). The CCES survey of 2006 used a 100-point format for the ideology questions, which was rescaled to the standard range of seven and then rounded to the closest point.

[2] Unfortunately, going further back was not possible: The ANES did not conduct a midterm study in 1950, and the 1954 study did not ask vote choice.

categories), household income (five groups), marital status (six categories), education (seven categories), age (seven groups), gender (M/F), race-ethnicity (Black/White/Hispanic/other), religion (Prot/Cath/Jew/other), and census region (NE/NC/S/W).

To avoid undue extrapolation, all individual-level variables were treated as nominal (i.e., entered as dummy sets for each value, including DK). Those that were not completely observed were subjected to an initial round of multiple imputation using multinomial logit. All computations were carried out in Stata 16.0 MP.

While individual-level variables are helpful to estimate distributions within a certain election year, their ability to model changes in context over time is limited. As a first measure to make sure that the source and target contexts are not too different, the source data were limited to the years 1972-1998. After this point, perceptions of party positions polarized markedly, and the ANES also stopped covering midterm elections in favor of the CCES, which makes samples and variables hard to compare. In addition, to incorporate changes within the chosen timeframe, the imputation model was augmented with party positions based on DW-NOMINATE scores.[3]

[3] Party positions are based on the first dimension of the DW-NOMINATE database (Lewis et al. 2020). They were constructed as follows. First, caucus medians for each Congress and party were averaged across the House and the Senate. Next, to align the DW-NOMINATE scale with the survey scale of voter perceptions used in the ANES, mean perceptions of each party were computed for each election sample, and regressed on the respective party's DW-NOMINATE score from the Congress during which each election took place. A second-order polynomial was specified to improve model fit. The predicted values of these two regressions are the measures that finally enter the imputation model. They have the advantage that they are based on real voter

The specification of the imputation model benefits from the fact that the incomplete variables (ideological position of respondent, and their perceptions of party positions) are closely interlinked with some of the complete variables—in particular turnout, vote choice, and party identification. These links were expressed using proximity theory, which predicts that voters will support (and identify with) the party that is ideologically closer to them. Proximity theory generally provides a good description of the US electorate—to some extent because voters actually rely on ideology and policy issues to make up their minds, and to another extent because the political world offers a number of effective proxies (e.g., Ansolabehere et al. 2008; Jessee 2009; Simas 2013; Joesten and Stone 2014).

To estimate the proximity function empirically, the NOMINATE-based party positions were first used to generate seven hypothetical distance measures, one for each of the seven points of the respondent self-placement scale. That is, for each party in each year, we have a value for the party's distance from the liberal pole, the conservative pole, and the five points in between. Next, the self-placement scale was disassembled into eight dummies (the seven scale points, plus DK). Each of these dummies was then used as a dependent variable in a regression on the respective hypothetical distance measure, *in interaction* with vote choice and nominal party identification (plus all other imputation variables). Expected values were predicted from each of the eight regressions. These values express the probabilities that a certain respondent is located at each of the points on the scale, given their vector of vote choice, party identification, and other covariates. The eight variables were finally used as predictors in the actual imputation—a

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perceptions, and they can be safely extrapolated into the past thanks to their anchoring in objective DW-NOMINATE scores.

multinomial logit model of the self-placement scale.[4] To incorporate estimation error, 10 multiple imputations were generated, and results aggregated according to the standard rules proposed by Rubin (1987).

After the imputation of self-placements, the resulting variables were used to impute perceptions of party positions. Again, scales were first disassembled into dummies, and each dummy was used as a dependent variable in a regression on the imputation variables. The model specification was the same as in the imputation of self-placements, just that the imputed self-placements were substituted for the hypothetical distance measures. Thus, probabilities of a respondent perceiving a party in each of the locations of the scale are estimated from their combination of self-placement, vote choice, and party identification (plus the remaining vector). These estimates were again used in a second stage as predictors of a multinomial model. Since perceptions of the two party positions are not independent of each other, the multinomial model estimated the *joint* distribution of the two, with first-stage estimates for both parties as covariates. Again, 10 multiple imputations were generated.

While proximity theory is stated in highly general terms, the degree to which voters behave accordingly depends on context (e.g., Wright 1978; Patty 2006; Shor and Rogowski 2018; Weber and Franklin 2018)—as does, more obviously, their motivation to participate in elections in the first place. To incorporate such heterogeneity into the imputation, the proximity

[4] While a logit link would be preferable for the first-stage regressions as well, this was not possible due to the computational complexity of the model. A linear model was used instead. The second stage then restores the multinomial distribution.

effects that link imputed self-placements and perceptions were allowed to vary by the position of a survey in the electoral cycle—midterm versus on-year, and first term versus second.

Importantly, none of the variables (micro or macro) identifies the party affiliation of the president. While this choice may cost some statistical precision, it is critical to avoid potential endogeneity of the imputation procedure with the hypotheses of the paper, which are all based on the in-party/out-party distinction.

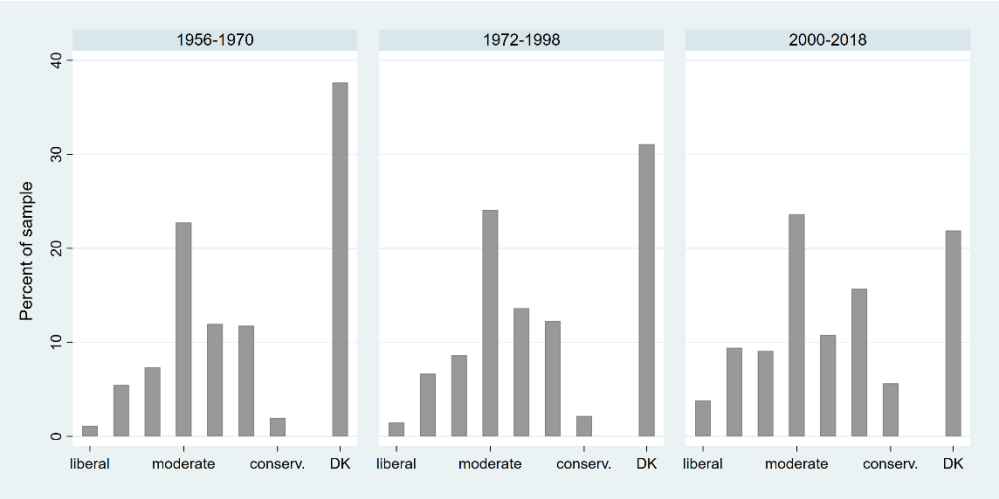
Figure A1 shows the results of the imputation. They are broken down into three periods: 1956-1972, the target samples that were imputed; 1970-1998, the source samples that were used to estimate the imputation model; and 2000-2018, which is shown for comparison. Given these three periods, the imputed values arguably have face validity: fairly moderate distributions, and somewhat less ideological thinking (more DKs) than in later years.

Finally, note that the imputation is not critical for the conclusions of the paper. All core findings hold with or without the imputed election years.[5] While the imputation exercise may not have redefined our theoretical understanding of Congressional elections, however, it provides a deeper historical impression, as well as an "out-of-sample" test of the theory's generality and predictive power.

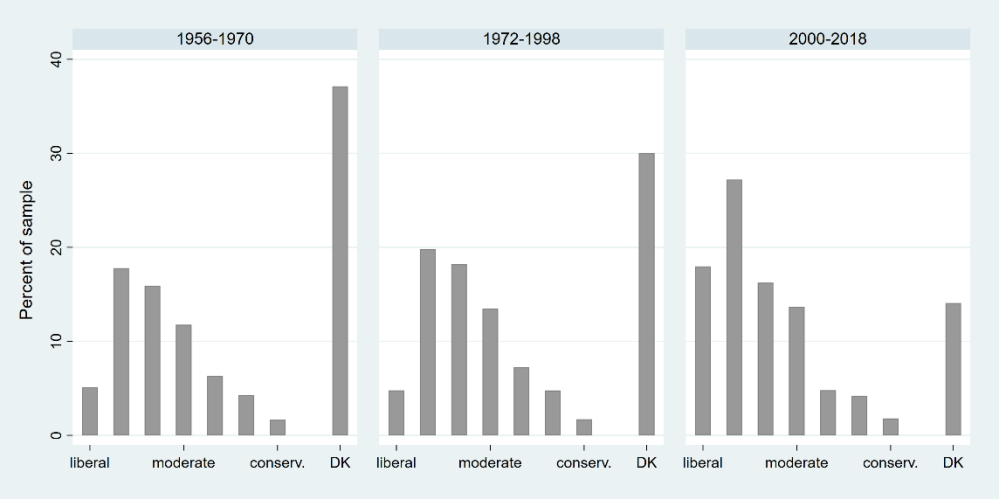
[5] When limited to the elections of 1972-2018, the pooled midterm loss in Table 2 becomes somewhat smaller (-9.1% vs. -9.7%), while the coefficients of the main context model in Table 4 become somewhat stronger (-22.94 vs. -20.40 for the first term, and -1.88 vs. -1.68 for the Gallup estimate).

Figure A1 – Distributions of the imputed variables

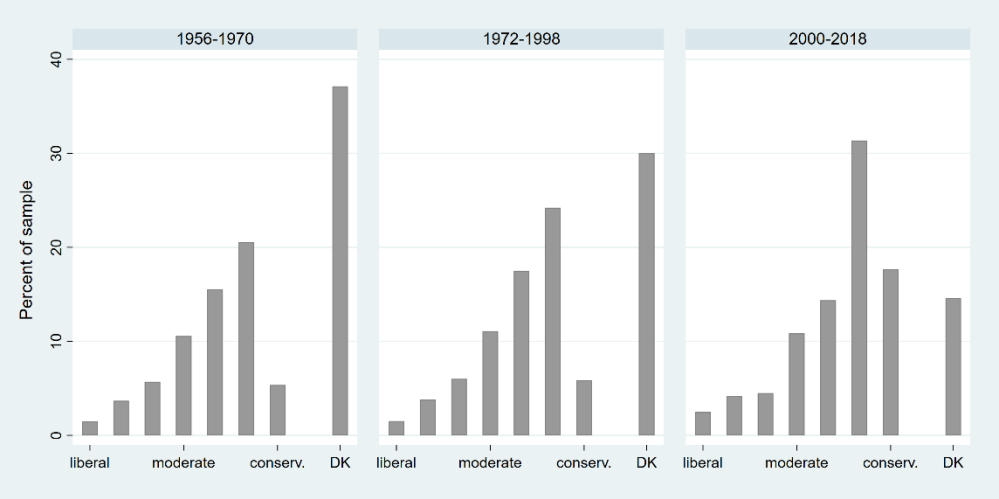
(a) Respondents' self-placements



(b) Perceptions of the Democratic Party



(c) Perceptions of the Republican Party



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