

# Supplemental Appendices to Party Calls and Reelection in the U.S. Senate

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## Appendix A: Classifying Party Calls

As in Minozzi and Volden (2013), we use an algorithm to classify votes as “party calls”—that is, whether votes are predicted by party membership even after controlling for ideology. We classify votes as “party free” if, in turn, they are *not* reliably predicted by party membership, and we use those “party free” votes to estimate ideal points absent party influence.

The classification algorithm is iterative. In each iteration of the algorithm, ideal points are estimated based only on the votes which were classified as “party free” in the previous iteration. All votes are then regressed on ideal points and party membership, and votes are re-categorized based on the explanatory power of party in these regressions. To begin the process we need an initial classification, and so ideal points in the first iteration are estimated using lopsided votes (which have more than 65% or less than 35% of members of the chamber voting on the same side). We then use a 15 iteration “burn-in” period for each Congress. During this early period, many votes switch categories from iteration to iteration. The number of switchers declines rapidly in these early iterations. After burn-in, the algorithm continues until either (1) the number of votes that switch classifications stops declining, or (2) there are fewer than five votes that switch. Once either condition is met, the algorithm continues for an additional 15 iterations. Finally, we use the last five iterations to provide a final classification of votes. During these final iterations, any vote that does not switch is classified in its appropriate category. Any vote that does switch is dropped from further analysis, on the basis that these votes could not be credibly classified.

Our algorithm departs from MV’s in a few ways, most of them minor. However, a key change was the use of the `binIRT` command from the R package `emIRT` (Imai, Lo, and Olmsted, 2016) to estimate ideal points, replacing the `ideal` command from the R package `pscl` (Jackman, 2015) used by MV. The `binIRT` function is considerably faster than `ideal`, and by using it, we were able to test a much wider variety of alternative specifications to the original algorithm.

The results of these alternative specifications culminated in a few alterations to the original algorithm. Throughout, to ensure continuity of method, we vetted alternatives by re-estimating the results from MV. Those results are remarkably robust to the alternatives we explored. Such

robustness notwithstanding, we elected to make two minor changes.

The original classification algorithm used logistic regression to predict votes, meaning that party-line votes suffered from separation, which was resolved using a bias-reducing logit designed for that purpose (Zorn, 2005). In this paper’s classification method, we used linear models of roll call votes instead. The classification based on linear models improved on the bias-reduced logit-based method in three different ways. First, classification using the linear model decreased the proportion of unclassifiable votes from classification using the bias-reduced logit, from 9% to 3% in the House and from 2% to 0.4% in the Senate. Second, party call classification based on linear models increased the positive correlation between close votes and party calls, from 0.18 to 0.51 in the House and from 0.12 to 0.44 in the Senate. Third, within each individual model of a roll call vote, the coefficients on party and ideal point may both be positive, both negative, or have different signs. If party calls work to align party and ideology, then their signs should match at higher rates than those of non-party calls. The difference in match rates between party calls and non-calls therefore constitutes a measure of convergent validity and therefore permits a comparison of the two classification methods. Again, linear models proved the better of the two. We return to these criteria below to more fully evaluate the method used in the paper.

The second minor change to MV’s classification method was that the original algorithm classified votes as “party calls” if the  $p$ -value on the party indicator in a regression of a roll call vote was smaller than 0.01. However, the House roll call data features many more votes cast per roll call than the Senate, since the lower chamber is much larger. As such, the threshold of 0.01 eventuated in classifying few Senate votes as party calls, essentially because of the smaller  $n$ . At the 0.01 threshold, about 15% of classifiable votes were coded as party calls. For reference, in the House, the 0.01 threshold coded about 65% of classifiable votes as party calls. We explored a variety of alternative  $p$ -value thresholds and settled on 0.05 for the Senate (keeping  $p = 0.01$  for the House), as it increased the fraction of classifiable votes coded as party calls to 52%.

We also explored a variety of alternatives to the algorithm used here, but ultimately rejected them in order to maintain as much consistency with MV as possible. These included using random

initial classifications of votes, adding a “simulated annealing”-style heating and cooling schedule, and alternative stopping rules. We found that none of these alternatives significantly altered the results presented in the paper, nor did they improve convergent validity, and therefore we elected to use an algorithm that closely matched the early effort.

Finally, with this algorithm in hand, we probed for differences in vote classifications using the criteria described briefly above. First, we broke down votes by close/lopsideness and classification as party calls/party free. Table A1 shows these comparisons for each chamber. In each panel, there is a notable, though far from perfect, correlation between close votes and party calls. This correlation is higher in the House (0.51) than in the Senate (0.44), but the two are remarkably close. We take this as *prima facie* evidence that the classification algorithm is at work on similar data-generating processes.

Table A1: Party Calls and Close/Lopsided Votes

	<u>House</u>		<u>Senate</u>	
	Party Free	Party Call	Party Free	Party Call
Close	1091 (5%)	9305 (45%)	1857 (13%)	5228 (37%)
Lopsided	6122 (29%)	4248 (20%)	4870 (35%)	2068 (15%)

The threshold for a vote to be lopsided was more than 65% of members voting on the same side of a roll call vote.

Next, we focus on whether party influence exacerbates or moderates ideological tendencies. In the regression models we use to classify votes, both ideal points and party are included as predictors of roll call behavior. We can therefore compare the signs on the coefficients of these variables to understand how the two variables interact on the average vote. Perhaps unsurprisingly, we find that the two coefficients have the same sign a majority of the time, regardless of chamber (see top third of Table A2). Interestingly, we further find that party calls explain most of this relationship; similar signs appear for party and ideal points for about 75% of party calls (middle of Table A2), yet less than 50% of non-calls (bottom of Table A2). We interpret this evidence as consistent with the model of party calls advanced in Minozzi and Volden (2013).

Table A2: Comparing Coefficient Signs from Roll Call Regressions

	House		Senate	
	(−) Ideal	(+) Ideal	(−) Ideal	(+) Ideal
All Votes				
(−) Party	8127 (39%)	2888 (14%)	4581 (33%)	2244 (16%)
(+) Party	3394 (16%)	6357 (31%)	3188 (23%)	4010 (29%)
Party Calls Only				
(−) Party 6166 (45%)	1042 (8%)	2807 (38%)	793 (11%)	
(+) Party 1312 (10%)	5033 (37%)	1129 (15%)	2567 (35%)	
Party Free Only				
(−) Party	1961 (27%)	1846 (26%)	1774 (26%)	1451 (22%)
(+) Party	2082 (29%)	1324 (18%)	2059 (31%)	1443 (21%)

Each observation is a roll call vote, and the table categorizes these votes based on the signs of the Party and Ideal Point coefficients in the vote-specific regressions that classify votes as party calls. The Party variable is an indicator for Republican and is positively correlated with ideal points.

## Appendix B: Summary Statistics

Here we give descriptions and report summary tables of the variables used in our paper. Members are grouped either as Democrats or Republicans, with independents being grouped with the party they caucus with in each chamber. The data are constructed with observations for members in each Congress they were present in. Values are according to member status in each Congress. Members who switched parties have one observation per party membership. In each chamber, *Majority* is an indicator variable for if a member's party is in the majority during a Congress, which is used to divide results and summary statistics.<sup>1</sup>

The bulk of the data were provided by the Legislative Effectiveness Project (Volden and Wiseman, 2014) or constructed from those data, with a few exceptions. Keith Poole furnished the roll call data. Committee data for all Senate terms and the 110<sup>th</sup>-112<sup>th</sup> in the House are from Charles Stewart's Congressional data page, with committee value ranks based on Groseclose and Stewart (1998). Committee data from the 93<sup>rd</sup>-109<sup>th</sup> House come from the replication data for MV. House elections data were provided to us by Gary Jacobson, and Senate elections data come from Dave Leip's U.S. Election Atlas. Gingrich Senators were identified based on Theriault (2013).

*Party-Free Ideal Point* is a member's ideal point, estimated with the binIIRT function from the R package emIIRT using only party-free votes, mean-centered at zero, scaled to have unit standard deviation, and oriented so that Democrats' values are on average lower (i.e., further left) than Republicans'. *Ideological Extremism* is simply the *Party Free Ideal Point* value for Republicans and sign-reversed for Democrats, so that higher numbers represent more extreme members for both parties. *Responsiveness* to party calls is the percentage of party calls on which a member voted with a majority of their party; *Baseline Rate* of voting with the party is that percentage for party-free votes.

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<sup>1</sup>Each party held the majority for a portion of the 107<sup>th</sup> Senate, with Democrats in control for most of the term. Therefore, for the purposes of analyses, Democrats were coded as the majority of this term. This decision does not meaningfully affect the inferences in the paper.

*Up for Reelection* is a Senate-specific variable, representing whether a member's election falls during a Congress. *Vote Share* is calculated by the member's share of the vote relative to their nearest opponent.<sup>2</sup> *Presidential Vote Share* in each chamber is an indication of Democrat or Republican (depending on who the member caucused with) presidential candidate 2-party vote share in the previous election based on the previous presidential election. *Party Leader* is an indicator for if a member is in one of the positions identified as the congressional leadership (other than committee positions) in the *Almanac of American Politics* for a particular Congress. *Committee Chair* is an indicator for whether the member held such a position in that Congress. *Power Committee* represents a member being on one of the top four ranked committees. *Best Committee* takes a value based on the highest ranked committee a member was on with ranks reversed so that higher means better, i.e., values range from zero (member not on a committee) to the number of committees in the chamber (member served on the highest ranked committee). *Female* is an indicator variable for female legislators. *African American* is an indicator for African American legislators. *Latino* is an indicator for Hispanic and Latino legislators. *South* is an indicator for if a member represents a state or district from 13-state South. *Seniority* is a count of consecutive terms a member has served. *Freshman* is an indicator variable for the first Congress of a member previously not in Congress.

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<sup>2</sup>In the House, we report above or below average centered at zero since unchallenged runs were coded as missing, to avoid selecting values for these. This decision had no impact on results.

Table A3: Senate Summary Statistics

Variable	Mean	SD	Min	Max
Responsiveness	85.5	11.4	8.8	100
Party Free Ideal Point	0.00	1.00	−3.21	3.38
Ideological Extremism	0.69	0.72	−1.62	3.38
Baseline Rate	82.0	8.2	45.1	100
Up for Reelection	0.29	0.45	0	1
Vote Share	61.2	9.9	50.0	100
Pres. Vote Share	52.1	9.7	20.1	78.0
Party Leader	0.10	0.30	0	1
Committee Chair	0.18	0.39	0	1
Power Committee	0.73	0.45	0	1
Best Committee	12.3	2.7	0	15
Female	0.07	0.25	0	1
African American	< 0.01	0.06	0	1
Latino	0.01	0.09	0	1
South	0.26	0.44	0	1
Seniority	6.25	4.62	1	26
Freshman	0.11	0.32	0	1

Num. Obs. = 1,991.



Table A4: House Summary Statistics

Variable	Mean	SD	Min	Max
Responsiveness	85.8	11.5	8.0	100
Party Free Ideal Point	0.00	1.00	−4.05	9.35
Ideological Extremism	0.60	0.80	−4.31	9.35
Baseline Rate	87.0	7.5	0	100
Vote Share	67.4	11.8	50	100
Pres. Vote Share	56.6	12.4	16.3	96.1
Party Leader	0.04	0.19	0	1
Committee Chair	0.05	0.22	0	1
Power Committee	0.25	0.44	0	1
Best Committee	13.8	6.4	0	22
Female	0.09	0.29	0	1
African American	0.06	0.24	0	1
Latino	0.03	0.18	0	1
South	0.30	0.46	0	1
Seniority	5.33	4.05	1	29
Freshman	0.16	0.36	0	1

Num. Obs. = 8, 540.

## Supplemental Appendix C: Regression Models of Responsiveness

In this appendix, we present results from regression models in the House and Senate, which model *Responsiveness* to party calls separately by party and majority status. Table A5 presents results for the House, and Table A6 those for the Senate.

Three sets of results are clear from these models. First, in keeping with the theory and evidence in MV, we expected that members with higher *Ideological Extremism* would also have higher levels of *Responsiveness*. Indeed, even with the amendments to the classification algorithm described in Supplemental Appendix A, we see similar evidence to this effect across all subgroups in the House (first row of Table A5). We see similar evidence from the Senate (first row of Table A6), and, moreover, the magnitude of these coefficients is largely consistent across subgroup and chamber.

Second, one of the benefits of replicating MV's findings in the Senate is that there is variation in whether members were up for reelection. We expected that reelection would make members less responsive to the call of the party as they work to pivot to their districts when approaching reelection. The results appear in the third row of Table A6. We find first that the sign is in the expected direction and similar magnitude (about one percentage point) for all subgroups. We also find that the coefficient achieves statistical significance for all subgroups.

Table A5: Responsiveness to Party Calls in the U.S. House, 1973-2012

	All	Democrats	Republicans	Majority	Minority
Ideological Extremism	7.75*** (1.26)	8.30*** (0.89)	5.88*** (1.70)	6.57*** (1.44)	8.73*** (1.17)
Baseline Rate	0.57*** (0.12)	0.63*** (0.09)	0.41* (0.19)	0.51** (0.16)	0.63*** (0.08)
Vote Share	-0.01 (0.03)	-0.05 (0.03)	0.02 (0.04)	-0.13*** (0.04)	-0.05 (0.04)
Pres Vote Share	0.03 (0.08)	0.10 (0.06)	-0.10 (0.10)	0.21* (0.09)	0.16* (0.08)
Party Leader	1.80** (0.56)	1.96** (0.73)	2.77** (0.99)	2.61*** (0.56)	1.80* (0.81)
Committee Chair	4.98*** (0.95)	2.49** (0.92)	9.72*** (2.02)	1.85*** (0.56)	
Power Committee	2.76*** (0.76)	1.83*** (0.44)	2.93** (0.96)	3.00*** (0.87)	1.07 (0.82)
Best Committee	-0.17 (0.10)	-0.04 (0.05)	-0.24 (0.13)	-0.18 (0.11)	-0.17 (0.11)
Female	1.17 (0.63)	0.56 (0.53)	-0.10 (1.50)	-0.02 (0.66)	2.17** (0.77)
African American	1.90 (1.36)	-0.47 (1.08)	5.13*** (1.30)	-2.80 (1.77)	3.13 (1.77)
Latino	3.25** (1.16)	1.76 (1.08)	2.34 (1.71)	2.97** (0.93)	2.97* (1.51)
South	-0.88 (0.54)	-2.47** (0.85)	3.56*** (0.77)	-1.77** (0.59)	-0.53 (0.89)
Seniority	-0.05 (0.06)	0.05 (0.06)	-0.33* (0.14)	0.03 (0.07)	0.01 (0.10)
Freshman	0.79 (0.67)	-0.07 (0.53)	1.20 (1.01)	0.22 (0.51)	-0.08 (0.55)
Intercept	31.78** (11.78)	25.13** (8.49)	52.03* (20.32)	38.87* (15.37)	17.13* (8.60)
R <sup>2</sup>	0.46	0.63	0.30	0.57	0.47
Adj. R <sup>2</sup>	0.46	0.63	0.30	0.57	0.47
Num. obs.	8540	4743	3797	4897	3643
RMSE	8.44	7.36	8.87	7.50	8.04

Results are produced by OLS regressions for all members for the entire period in the first column, with additional analyses for all Democrats and Republicans as well as all members of the Majority and Minority party in Congresses 93-112 in the House of Representatives. Details on the variables are provided in Appendix B. Standard errors are clustered by Congress and by member. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

Table A6: Responsiveness to Party Calls in the U.S. Senate, 1973-2012

	All	Democrats	Republicans	Majority	Minority
Ideological Extremism	6.23*** (0.83)	3.12** (1.17)	7.80*** (1.02)	4.80*** (0.99)	8.00*** (0.95)
Baseline Rate	0.74*** (0.07)	0.76*** (0.09)	0.74*** (0.08)	0.70*** (0.07)	0.72*** (0.09)
Up For Reelection	-0.95*** (0.19)	-0.73** (0.23)	-1.39** (0.48)	-1.08** (0.33)	-0.90* (0.44)
Vote Share	0.03 (0.03)	-0.06* (0.02)	0.15** (0.05)	-0.01 (0.03)	0.07 (0.05)
Pres. Vote Share	0.10 (0.05)	0.24*** (0.05)	-0.14 (0.10)	0.18** (0.07)	0.03 (0.12)
Party Leader	1.63* (0.72)	2.27* (1.04)	0.91 (0.78)	1.56* (0.64)	1.84 (1.08)
Committee Chair	2.10** (0.79)	0.83 (1.27)	3.69* (1.49)	0.19 (0.65)	
Power Committee	-0.67 (0.72)	-0.80 (0.81)	-0.37 (1.33)	-0.05 (0.87)	-1.41 (1.19)
Best Committee	0.16 (0.14)	0.22 (0.16)	0.02 (0.25)	0.02 (0.16)	0.37 (0.22)
Female	2.03* (0.89)	1.66* (0.74)	0.42 (2.29)	0.72 (0.65)	3.48* (1.74)
African American	-4.69 (2.46)	-1.00 (2.44)	-10.99*** (1.89)	1.26 (1.10)	-5.01* (1.95)
Latino	5.65* (2.52)	1.75 (1.23)	7.19 (4.43)	4.67 (3.19)	5.98 (3.44)
South	0.60 (0.70)	-1.68 (0.95)	0.85 (1.21)	-0.11 (0.72)	1.21 (1.04)
Seniority	0.01 (0.07)	0.05 (0.11)	-0.02 (0.13)	0.06 (0.09)	0.13 (0.10)
Freshman	0.80 (0.56)	0.68 (0.68)	0.35 (0.73)	0.38 (0.66)	0.93 (1.06)
Intercept	11.89 (6.91)	9.61 (7.59)	18.42* (7.20)	16.90* (7.32)	8.99 (7.59)
R <sup>2</sup>	0.63	0.69	0.64	0.68	0.62
Adj. R <sup>2</sup>	0.63	0.68	0.64	0.67	0.61
Num. obs.	1991	1041	950	1099	892
RMSE	6.97	6.12	7.24	5.91	7.68

Results are produced by OLS regressions for all members for the entire period in the first column, with additional analyses for all Democrats and Republicans as well as all members of the Majority and Minority party in Congresses 93-112 in the Senate. Details on the variables are provided in Appendix B. Standard errors are clustered by Congress and by Senator. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

## Supplemental Appendix D: Senate Reelection Fixed Effects Models

To better test the role of reelection, we use same-state Senators as a natural pairing. Table A7 presents the results of fixed effects regression models which were summarized in Figure 2 in the main text. In both the figure and the table, the only observations included are those same-state pairs in which (only) one member is up for reelection. The first two models include no control variables beyond the fixed effects, while the latter two also adjust for relevant control variables including lagged values of *Responsiveness* to party calls, *Ideological Extremism*, and *Baseline Rate* of voting with the party.

Across both sets of findings in the table, we see Senators up for reelection being significantly less responsive to party calls than are those who are not up for reelection. Moreover, on the party-free votes, there is no significant difference across same-state Senators. Lacking a party call on such votes, those up for reelection are not placed in a difficult position of choosing between the party and their constituents.

Table A7: Senate Fixed Effects Models

	Responsiveness	Baseline Rate	Responsiveness	Baseline Rate
Up For Reelection	-1.62*	-0.08	-1.34*	0.33
	(0.63)	(0.61)	(0.60)	(0.47)
Lag Responsiveness			0.31	0.06
			(0.19)	(0.12)
Lag Ideological Extremism			4.72*	1.27
			(1.86)	(1.09)
Lag Baseline Rate			0.37*	0.56***
			(0.16)	(0.09)
Republican			0.67	-0.34
			(1.53)	(2.02)
Majority			4.49*	1.69
			(1.97)	(2.08)
Vote Share			-0.00	0.00
			(0.06)	(0.03)
Pres. Vote Share			0.01	-0.04
(oriented by Senator's party)			(0.11)	(0.08)
Party Leader			0.86	0.90
			(0.65)	(1.09)
Committee Chair			-0.97	0.68
			(0.80)	(1.21)
Power Committee			0.51	1.10
			(1.30)	(0.99)
Best Committee			-0.02	-0.11
			(0.16)	(0.23)
Female			-0.09	-0.13
			(0.58)	(1.54)
African American			0.66	-2.79
			(2.46)	(2.83)
Latino			-2.88	1.76
			(4.92)	(6.99)
Seniority			0.09	0.00
			(0.13)	(0.08)
Num. obs.	1130	1130	952	952
R <sup>2</sup> (full model)	0.71	0.65	0.93	0.85
R <sup>2</sup> (proj model)	0.02	0.00	0.72	0.52
Adj. R <sup>2</sup> (full model)	0.41	0.30	0.84	0.66
Adj. R <sup>2</sup> (proj model)	-0.97	-1.00	0.36	-0.10

The table presents fixed effects regressions of *Responsiveness* to party calls and *Baseline Rate* of voting with party for the Senate, with fixed effects for Same State-Congress pairs, including 565 fixed effects for the models in the first two columns and 476 for the latter two models. Standard errors are clustered by legislator and Congress. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

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