

Representation of Primary Electorates in Congressional Roll Call Votes

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Abstract: Do members of Congress represent voters in their primary election constituencies or do general election voters discipline member roll call voting? Although conventional wisdom ascribes great importance to primary voters, political science theory and empirical evidence often find little influence. I present here evidence that member roll call votes are significantly related to the issue preferences of primary voters in their district in the 111th and 112th House. This holds when controlling for party. While members represent their primary constituents, they remain two to four times more responsive to general electorates. These results suggest that primary elections lead members to diverge from faithfully representing the interests of their general constituents, but that general electorates remain a driving influence on member roll call voting.

Keywords: Primary elections; Congress; representation.

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Elections offer a principal opportunity for citizens to connect their interests to the behavior of their representatives. Ambitious politicians, motivated to win, exert effort to create policy and politics in the interests of their constituents. While most endorse this *electoral connection* between representatives and voters at general elections where all citizens are eligible to participate, an electoral connection is less clearly beneficial at primary elections. In nominating contests such as primaries, often only the most partisan are allowed or choose to participate. If primary electorates are unrepresentative of the full constituency, the electoral connection in primaries may undermine rather than enhance overall representation. With the two major political parties in the United States increasingly homogenous over the last half century, many students of politics are concerned that primary elections have grown to reinforce or increase the divergence in interests between the two parties in Congress in a way that does not represent all voters.

And yet, both theoretical and empirical treatments in political science come to often negative conclusions on the centrifugal influence of primary elections. Theoretical accounts conclude that strategic primary voters should nominate candidates with the best chance of winning the general election, leading to an outcome quite similar to an electoral system without a primary election. Empirical accounts often find little influence of primary elections on the roll call voting behavior of members of Congress or state legislatures. Thus, uncertainty remains as to the presence and magnitude of the influence of primary elections. A further measurement problem is caused by the ideological sorting of the two parties over the last 40 years (Levendusky, 2010). Because the parties' primary voters have sorted over the same time period that House districts have become increasingly homogenous (e.g., Jacobson, 2015), it is difficult to untangle how much increasing homogeneity of House *general* electorates or increasing homogeneity of House *primary* electorates are related to the increasing divergence in member voting behavior.

A first step to understanding whether primary or general electorates are more implicated in party voting in Congress would be to measure the preferences of both primary and general electorates and relate them to member voting behavior. Due to the difficulty of measuring the preferences especially of smaller primary electorates, most studies have not actually measured this

relationship. A long line of research evaluating representation has looked mostly at general electorates, while research relating member behavior to primary elections considers the relationship to institution of nomination rather than to primary preferences directly. The few studies that have used direct measures of primary preferences have compared the self-reported ideology of self-reported voters to ideological summaries of member roll call votes such as NOMINATE.

In this article, I untangle the influence of primary and general electorate preferences in each district on the individual roll call votes cast by members of the U.S. House. In a pair of surveys, turnout is validated to voter files to limit the problem of over-reporting voting in describing who votes in which elections, and preferences are queried on specific issues rather than self-statement of ideology. I make comparisons within party to hold fixed party-level influences from outside of the district on member behavior, yielding a measure of within-party representation of primary and general voter issue preferences.

Within-party variation in roll call votes cast is related to variation in support in the members' district primary electorates. Despite within-party representation of primary constituents, the preferences of the general electorate remain about two to four times more related to the votes members cast than the preferences of the primary electorate. While primary electorates may push members to behave more partisan or ideological than they would in the absence of primary elections, general electorates still exert an important influence on roll call voting in the House. This conclusion implies that the over-time polarization of House general electorates should remain a leading candidate for electoral cause of party polarization in House roll call voting.

These results offer two additions to the current literatures on the electoral connection and primary elections. First, the findings provide evidence both that primary electorates have divergent preferences from general electorates and that primary elections influence roll call voting behavior in Congress. This combination of influential and divergent primaries suggests that primary elections are implicated in partisan divergence in voting in the U.S. House. Second, canonical work finds that members of Congress who vote more extreme than their electorate are more likely to lose reelection (e.g., Ansolabehere, Snyder, and Stewart, III, 2001; Canes-Wrone, Brady, and Cogan,

2002). Carson et al. (2010) argue that this result is odd because “it is not clear why any ambitious legislator would lose for being too extreme. Ideologically extreme members could restrict their ‘extremism’ to issues their constituents care little about (p. 600).” Carson et al. argue that legislators diverge from their general electorate due to party pressures within Congress and outside of the district. The results here, with party fixed effects that account for extra-district party pressure, suggest that primary electorates are also implicated in member divergence from their general electorate. Accounting for an electoral connection at the primary election explains why members cannot always restrict their extremism. Some members are cross-pressured by the two electorates to a degree that they must be out of step in one way or the other.

The essay proceeds as follows. I first highlight the theoretical basis for an influence of primary elections on member voting behavior and extend a canonical measure of representation to primary electorates. I discuss the shortage of evidence directly connecting the preferences of primary voters to the behavior of their members and present an empirical design to evaluate this connection. I show that the preferences of primary and general electorates on roll call votes diverge in many cases and then describe how members vote given this divergence. For measurement error, I present errors-in-variables models, then address robustness and offer concluding remarks.

The electoral connection, representation, and primary elections

Elections have long been proposed as an institutional solution to connect the interests of the governed to the interests of their representatives, from the authors of the American Constitution to modern theoretical and empirical social science. Empirical work does find evidence of a connection between member behavior and constituent interests related to elections, but estimates often suggest that representation is far from complete.¹ Primary elections are one possible cause of the limited representation of the preferences of general voters. If elections induce representation at

¹ The literature on representation and the electoral connection is long, but for empirical evidence consider for example Ansolabehere and Jones (2010), Ansolabehere, Snyder, Jr., and Stewart III (2001), Bafumi and Herron (2010), Canes-Wrone, Brady, and Cogan (2002), Carson et al. (2010), Clinton (2006), Krehbiel and Rivers (1988), Miller and Stokes (1963), Nyhan et al. (2012), or Tausanovitch and Warshaw (2013). Gerber and Lewis (2004) use a unique data source of actual ballots cast to measure correspondence of general election constituent preferences to legislator behavior.

the general election, they might also operate at a nominating election because candidates for office must both be nominated during the primary election and win office during the general election. If the preferences of the primary electorate diverge from the preferences of the general electorate and members represent primary voters, this could explain incomplete representation of general electorates.²

This is not the first essay to consider the consequences of primary elections for representation, but research on primary elections is less extensive and more inconclusive than that on general elections. Fenno (1978) argues that members consider the interests of various constituencies in making their choices in office, suggesting that members likely balance the interests of their primary electorates.³ Formal theoretical treatments of nominating elections, however, generally suggest that strategic primary voters, knowing a general election follows the primary, should nominate candidates close to the pivotal voter of the general election (e.g., Aranson and Ordeshook, 1972; Coleman, 1971). A formal model from the citizen candidate perspective, however, does suggest a centrifugal influence of primary elections under certain circumstances (Cadigan and Janeba, 2002).⁴

Statistical analysis has evaluated empirical implications of primary influence (Brady, Han, and Pope, 2007), or shows a relationship between separate measures of general and primary electorate ideology to summaries of ideology from member roll call voting (Butler, 2009). Gerber and Lewis (2004) do not find an effect of the legislator's partisan constituency while Clinton (2006) does. Having voter and representative preferences measured on different scales makes inference about

²Although elections are the commonly-considered pathway creating representation of citizen preferences, an alternative mechanism without issue voting in elections that could also lead to representation of constituent preferences is citizen candidate selection (e.g., Besley and Coate, 1997). In this model of elections, candidates for office are drawn from each district's population (or, the primary electorate of the party-of-nomination, e.g. Cadigan and Janeba, 2002) and the winner pursues his or her own preferences once in office. My interest in this paper is overall representation, which I will define as the sum of the electoral connection (members acting in anticipation of the need to win election) and candidate selection (members acting their own preferences after being selected out of their district). I note here that either or both of these mechanisms could be at play in generating representation of constituent preferences in member behavior.

³ Although Fenno (1978) defined one of the concentric circles as the "primary constituency," he was not talking about primary voters per se.

⁴ Most analysis of the implementation of or variation in the strength of primaries finds no or small connection to how members vote in office (Bullock and Clinton, 2011; Gerber and Morton, 1998; Hirano et al., 2010; McGhee et al., 2014).

representation a challenge due to the required translation from one space to another (see Matsusaka, 2001, for a summary of this problem). Broockman (2016) argues that ideological summaries do not accurately evaluate representation and argues in support of using specific issues. Both of these arguments suggest the value in analyzing support on specific roll call votes rather than ideological summary scales, which is a contribution of this paper.

Theoretical framework

I extend the framework of representation of Achen (1978) (also extended in, e.g. Gilens, 2005; Bartels, 2008) to measure the representation of more than one electorate. In this case, members may represent both their primary electorate and their general electorate. Formally, consider the original Achen (1978, Eq. 3) characterization of responsiveness between a member's behavior r and mean constituent preferences μ about the member's behavior,

$$r = \alpha + \beta\mu + \varepsilon, \tag{1}$$

with α bias and ε a disturbance term, and β measuring representation. Here μ is the average preference of the full constituency and β measures how members respond to changes in these preferences. The error term ε measures idiosyncratic characteristics of the member or the district not related to district support for the behavior. Applying the concept to a two-stage electoral system suggests allowing separate representation of primary and general electorates. Describing the preferences of the general and primary electorate in district i over some roll call vote y_i as x_i and z_i – which measure support for the yea position of general and primary voters, respectively – let the representation equation be

$$y_i = \alpha + \beta_1 x_i + \beta_2 z_i + \varepsilon_i, \tag{2}$$

now with β_1 mapping general electorate support to member vote and β_2 mapping primary electorate support to member vote. When β_2 is zero, Eq. 2 reduces to the original Achen (1978)

characterization of responsiveness and the common regression in the literature on representation. However, as β_2 moves away from zero indicating representation of the primary electorate, and if x_i and z_i diverge from each other, correspondence between support in the general electorate and member choices decreases, generating incomplete representation of general voters due to the representation of primary voters.

As a quantity of interest, I define here the balance of representation as the ratio of β_1 to β_2 .⁵ A variety of mechanisms likely influence the balance of representation each member strikes. Under an electoral connection, β_1 and β_2 are related to the electoral threat members perceive from voting against their general and primary electorates.⁶ At least four factors might influence this electoral relationship. First, features of the two parties' coalitions of primary and general voters. For example, Democratic primary voters may be more forgiving than Republican primary voters or Republican general voters may be more forgiving than Democratic general voters, with consequences for the electoral costs of voting against the interests of one or the other. Second, the competitiveness of the two elections might influence balance, for example members from very competitive general districts may have larger β_1 than members from less competitive general districts. Third, primary system might influence composition of the primary electorate, for example with more closed primaries having more predictable levels of support for issues z_i with corresponding consequences for β_2 . Finally, majority or minority status in the legislature may have consequences for roll call voting either through agenda control or national partisan electoral consequences (e.g. Cox and McCubbins, 1993), both of which would have party-level influences on β_1 and perhaps β_2 .

In summary, theoretical models of representation suggest that electoral incentives or candidate selection should lead members to represent the interests of their electoral constituencies. Existing empirical evidence suggests representation of the preferences of general electorates, but little work evaluates representation of district primary electorates or the balance of representation allocated to

⁵ This quantity has two statistical requirements: first, that $\beta_2 \neq 0$, that members do represent their primary to some degree, and second that $x_i \neq z_i$ for at least one i , that primary and general electorate preferences are not always equivalent, without which β_1 and β_2 are not separately identified.

⁶ Formally, if members are motivated to attain the benefits of office b , their utility might be summarized $U = \Pr[\text{Renomination}|x]\Pr[\text{Reelection}|x]b$, and their decision is to choose some optimal vote pattern x^* to maximize U , the optimum of which is related to the functions mapping x to renomination and reelection.

primary versus general electorates.

Data and methods

To evaluate representation of primary electorates and the balance of representation in roll call voting, I consider the relationship between the roll call votes cast by members of the House and the preferences over those votes by their primary and general electorates. While roll call votes are publicly observed, electorate preferences on each roll call vote are more difficult to characterize. The exact preferences of the general and primary electorates on each roll call vote (x_i and z_i above) are not observed either by the analyst or the member. I follow the logic of Fenno (1978) and Arnold (1990) that members work hard to anticipate the preferences of their electorates through constant interaction with constituents and district interests along with occasional opinion polling (Butler and Nickerson, 2011). Through these efforts, along with their aptitude as professional politicians, they gather a sense of the wants of their two electorates. Note that this constant search means that members need not necessarily even be subjected to a competitive primary or general election to represent the interests of the two electorates. If they sufficiently anticipate and respond to those interests, no challenger may want to waste their time.⁷ Thus, I measure the preferences of members' primary electorates even in places where incumbents run unopposed. Because primary voters vote for multiple offices, I am able to observe samples of the citizens who turn out in primaries in most House districts, and use this as an estimate of z_i , even if the member of the House him or herself was not challenged.⁸

Two recent public opinion surveys asked Americans whether or not they supported specific bills in the Congress preceding the interview. I use six roll call votes from the 111th House and the 2010 Cooperative Congressional Election Study (CCES) and five roll call votes from the 112th House and the 2012 CCES as the basis of the analysis. Each survey is a nationally representative

⁷ In the words of Hirano et al. (2010), "Since strategic candidates are likely to adjust their position to minimize electoral threats, whether MCs face primary competition is unlikely to be an accurate measure of the actual underlying primary threat they face (172)." The candidate selection mechanism could also generate representation without the presence of a challenger.

⁸ Of course, many members of the House are unopposed at the general election, as well, and the same logic applies to my measurement and theory about representation of the general electorate. Results hold in both competitive and uncompetitive general contests.

sample of around 50,000 Americans with interviews before and after the 2010 and 2012 elections, stratified by state and fielded over the internet. The surveys validate turnout records by matching respondents to administrative voter files.

To measure respondent preferences, each CCES asked: “Congress considered many important bills over the past two years. For each of the following tell us whether you support or oppose the legislation in principle.” I use all but four roll call vote questions.⁹ The 2010 CCES asked about 111th House roll calls for the Affordable Care Act, a carbon tax, Dodd-Frank financial reform, ending Don’t Ask Don’t Tell, the State Children’s Health Insurance Program, and the American Recovery and Reinvestment Act of 2009 (the government stimulus in response to the severe economic recession). The 2012 CCES asked about 112th House roll calls for repealing the Affordable Care Act, Ryan budget plan, Korea Free Trade agreement, Simpson-Bowles budget, and Keystone Pipeline.

With the turnout records validated after the election to administrative voter files, the two surveys provide samples of both validated primary and validated general voter support for each bill. Although each CCES is a large survey, sample sizes of validated primary voters in each district are still small enough to suffer from sampling error. Particularly challenging is that the error is likely to be larger for the smaller primary voter population than the general voter population, which might cause differential sampling error to have consequences for estimated coefficients of representation for the two populations. To account for this sampling error, I present in addition to standard regression results errors-in-variables models (same model as used in e.g., Achen, 1978; Clinton, 2006; Wright, Erikson, and McIver, 1985).

Diverging preferences of primary and general voters

In order for members to have to make choices in balancing the interests of their primary and general electorates, the interests of the two must diverge ($x_i \neq z_i$). While it may be reasonable

⁹ I set aside the 2012 question asking respondent preferences on the Affordable Care Act from the 111th Congress, the 2010 questions asking about FISA and TARP, which were only asked to a small number of respondents, and the 2010 question asking about Stem Cell, which was voted on in the 110th Congress. See the documentation for each CCES for details on all questions (Ansolabehere, 2010, 2012).

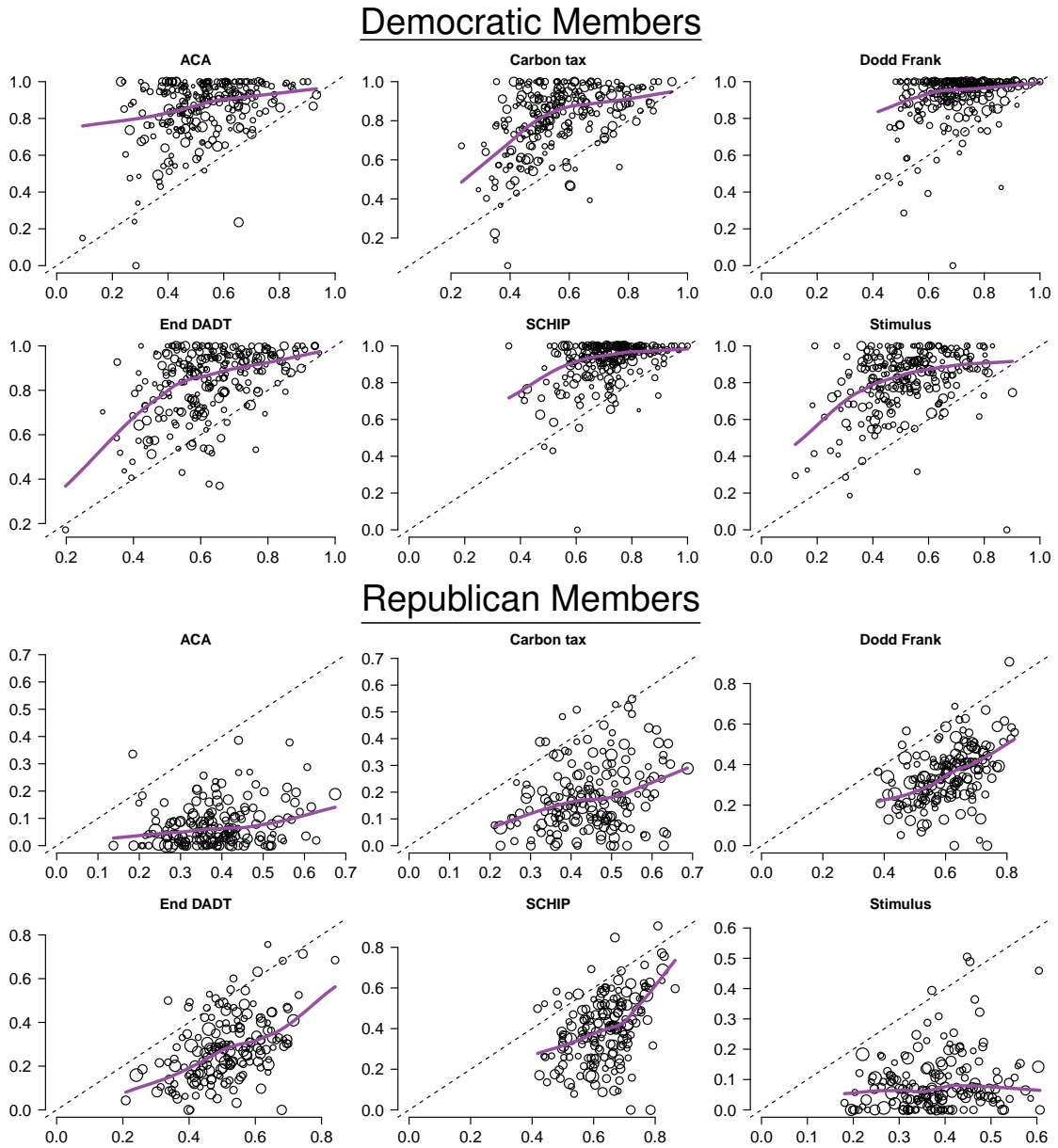
to assume that primary elections with more partisan composition and lower turnout than general elections would lead to divergent preferences, some existing research finds only limited divergence (e.g. Ranney and Epstein, 1966; Geer, 1988; Kaufmann, Gimpel, and Hoffman, 2003; Sides and Vavreck, 2013). In this section, I show that preferences of the two electorates do diverge on most of the bills under consideration.

In Figures 1 and 2, I plot the level of support for validated primary and validated general election voters in each congressional district surveyed by the two CCES for each of the six roll call votes from the 111th House and the five roll call votes from the 112th House. Each frame plots one bill for one party (districts represented by Democrats on top, by Republicans on bottom). The y-axis measures the support for the bill (proportion answering “support” divided by proportion answering “support” or “oppose,” missing values excluded) among validated primary voters. The x-axis measures level of support among general voters. All levels of support are weighted averages using the CCES post-stratification weights. For the primary electorate, I use only primary voters in the member’s district registered with the member’s party.¹⁰ Each frame also includes a loess smooth through the data points, and a dashed line representing the 45 degree line. Points that fall on the dashed line indicate the same level of support for the bill in the member’s primary as in the general electorate. Point sizes are proportional to the number of validated primary voters in the district.

For example, the upper left frame in Figure 1 plots support for the Affordable Care Act (ACA) in the 111th Congress among validated Democratic primary voters against validated general voters across the congressional districts represented by Democrats at the time of the ACA vote. Because almost all of the points, and the corresponding loess smooth, fall above the 45 degree line, Democratic primary voters were notably more supportive of the ACA than general election voters in districts represented by Democrats. The same frame for Republicans (upper left frame of lower

¹⁰ Because rules to participate in primary elections vary across states, this choice is likely to introduce measurement error that varies by state. But, this seemed to the author the most simple and transparent way to allocate voters to members’ primary constituencies when the validated records did not include which primary the voters participated in. I find similar results when considering only states with closed primary systems, where this complication is less pronounced.

Figure 1: Relationship of support in general electorate to support in primary electorate, 111th House, by party



Note: The x-axis in each frame is support in the house district among general election voters for the bill, and the y-axis is support in the house district among primary election voters who report that member's party of registration. Point size proportional to number of validated primary voters in survey. Lines are loess smooths.

panel to Figure 1) shows that for almost all districts, Republican primary voters were less supportive of the ACA than general election voters, even in districts represented by Republicans.¹¹ This pattern is mostly similar across the six bills of the 111th Congress: Democratic primaries more supportive of bills than Democratic generals, and Republican primaries more opposed than Republican generals. However, there is variation across issues in level of divergence, and heterogeneity across districts in levels of primary and general support.

The bills brought to the floor by the Republican majority in the 112th House (Figure 2) have different characteristics than the bills brought by the Democratic majority in the 111th. There are no bills that show strong support from Democratic primary electorates with variation in support across Democratic general electorates. Instead, bills are either opposed both by Democratic primaries and Democratic generals (Ryan Budget and Repeal ACA), or show heterogeneity in support across districts that varies between primary and general electorates. Similar features are present in the bottom Republican panel of Figure 2. Republican primary electorates are near universally supportive of Keystone Pipeline and Repeal ACA while the corresponding Republican general electorates vary widely in support for these measures. For the Korea Free Trade agreement and the Ryan and Simpson-Bowles budgets, support in primary electorates varies with support in general electorates.

In summary, the two figures in this section demonstrate that on most of the bills considered, the preferences of both Democratic and Republican members' primary and general electorates diverge in a way that often makes it difficult to represent both with the same vote.

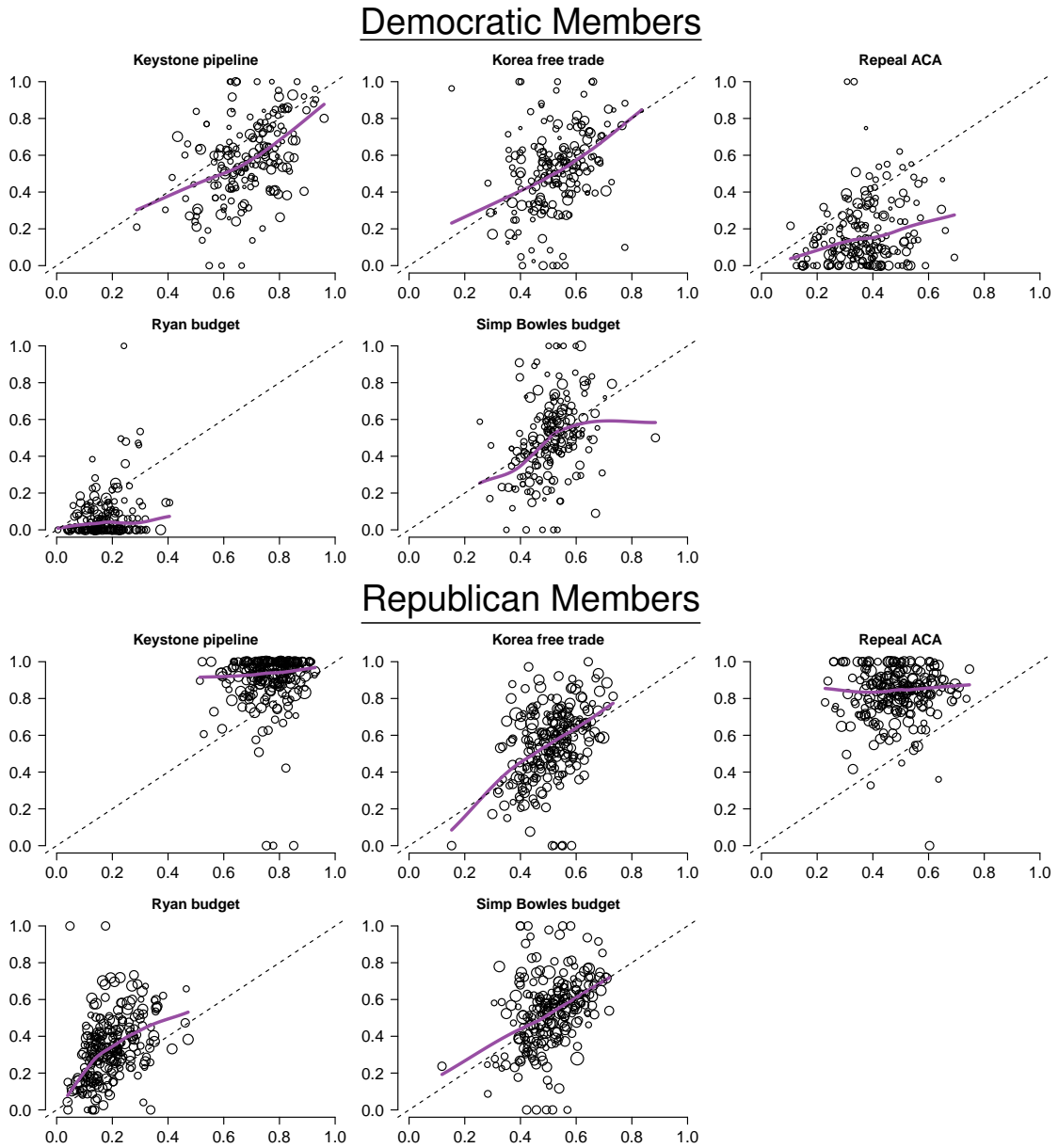
Balance of representation

In this section, I present graphical summaries and regression estimates of the balance of representation. I show that members represent both primary and general electorates, and that representation appears to favor the general electorate about two to four to one over the primary electorate.

Each frame of Figure 3 is a heat map of member roll call votes in relation to the level of support

¹¹ Note that the ranges of the x and y axes are the same on each frame for a constant angle to the 45 degree line, but vary across frames to maximize presentation of the data. For example, no Republican general electorate had level of support for the ACA greater than 0.7, while a few Democratic general electorates were above 0.9.

Figure 2: Relationship of support in general electorate to support in primary electorate, 112th House, by party



Note: The x-axis in each frame is support in the house district among general election voters for the bill, and the y-axis is support in the house district among primary election voters who report that member's party of registration. Point size proportional to number of validated primary voters in survey. Lines are loess smooths.

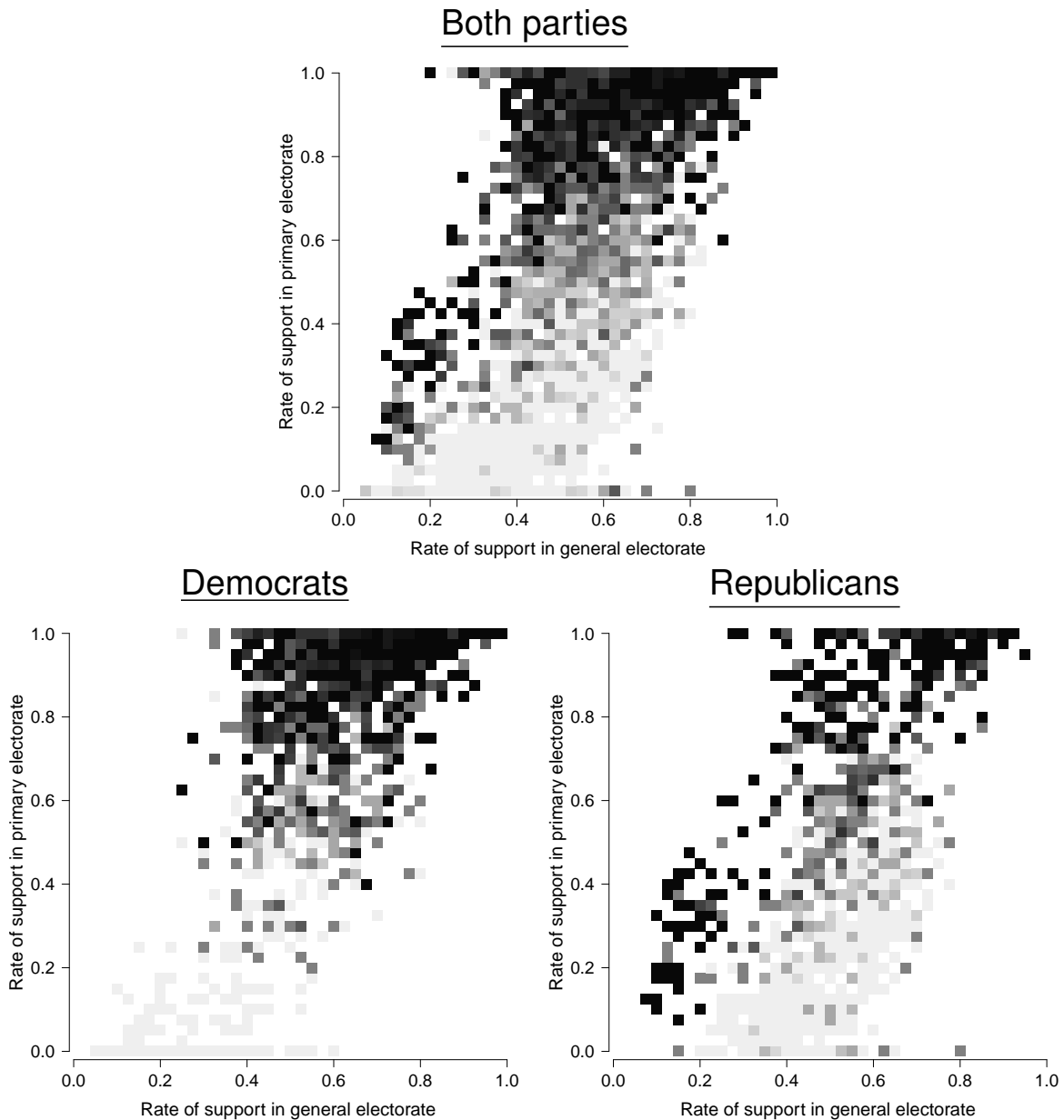
for that roll call vote in the primary (y-axis) and general (x-axis) electorate for the full set of eleven votes presented in Figures 1 and 2 above. Each cell in the plot is shaded corresponding to what proportion of members with level of support at that intersection of primary and general support voted yea, darker more yea, lighter gray less yea. White cells indicate zero or one case at that intersection, too little to plot. Each frame pools across all 11 roll call votes, with the bottom two frames limited to Democrat and Republican members.

Figure 3 reproduces the finding of others: evidence of representation, but incomplete correspondence. The upper frame pooling both parties shows that yea votes are least likely to occur in the bottom left of the figure, where both electorates are opposed, while in the cells of the upper right with maximum support in both electorates, yea rates are high. For evidence on incomplete correspondence, high yea rates obtain in the bottom left quadrant for a set of cells with low support in both primary and general electorates – the bottom two frames highlight that these yea votes come from Republican members representing electorates in opposition. There are also many cells with support in the general electorate above 0.6 with middling yea rates. High rates of member support for bills seem to require support among primary electorates, though the two bottom frames indicate this is more the case for Democrats than Republicans. If one were designing a bill to get high yea rates, it is clear that to get Democratic yea votes, primary support should be above about 0.5 and general support should be above 0.4. For Republicans, primary support above about 0.7 appears most productive to a yea vote.

While Figure 3 provides initial evidence, the heat map does not highlight relative frequency (other than the single observation intersections suppressed). To gain an accounting of the balance of representation that weights each vote equally, accounts for variation in average support for bills, provides statistical control given positive covariance between support in primary and general electorates, and accounts for measurement error, I turn to regression models. By pooling across roll call votes and members and relating votes to level of support in each electorate, I estimate average values of β_1 and β_2 along with the balance of representation.

Starting with the specification from Eq. 2, which summarized the theoretical representation

Figure 3: Member roll call vote rate yea by support in primary and general electorates



Note: The x-axis in each frame is support in the house district among general election voters for the bill, and the y-axis is support in the house district among primary election voters who report that member's party of registration. Each cell plots the rate at which members at that intersection of general and primary support voted yea on the bill, with darker cells corresponding to higher rates of yea, and white cells indicating one or zero observations at that intersection. On average, rate yea increases with support in both electorates, but not perfectly, and notably Republicans vote yea at high rates on a few bills with plurality opposition in both primary and general electorates.

for one roll call vote on one bill, I first expand the specification to allow different bills to have different thresholds of support, the α bias term from Achen (1978). To account for extra-district party influence, I allow separate bias parameters for each bill in each party. These roll-by-party fixed effects measure the average support for the bill within each party and account for party-level influences on member votes from outside of each member’s district. The influences might include party reputation, issues of agenda control, donor considerations, or party policy preferences. Note that with these fixed effects, the two coefficients β_1 and β_2 estimate the relationship between *within-party-roll* variation in electorate support and member vote.

I estimate the regression specification modification of Eq. 2,

$$y_{ij} = \alpha_{jk(i)} + \beta_1 x_{ij} + \beta_2 z_{ij} + \varepsilon_{ij}, \quad (3)$$

where i indexes members, j indexes roll call votes, $\alpha_{jk(i)}$ is a roll j -party k intercept shift for the party of member i , and β_1 , β_2 , x , and z are as above coefficients and levels of support for general and primary electorates on the roll call in the member’s district. I estimate (3) with OLS to facilitate comparison to errors-in-variables models, and so use robust standard errors clustered on the member-congress. In addition to the simple OLS specification, I implement Fuller’s (1987) errors-in-variables model. Because both x and z are sample estimates, they are measured with error with z likely subject to greater measurement error than x due to smaller sample sizes of validated primary voters. The Fuller correction assumes that one or more independent variables are measured with additive noise, e.g. the observed z_i in each district is the true z_i^* plus random error ϵ_i , as occurs when z is estimated from a sample subject to sampling variability. With knowledge of the variance of the error ϵ , the coefficient of the regression of y on observed z can be modified to provide a consistent estimator of the true slope from y on z^* (Fuller, 1987).¹²

¹² In the single-variable case, for example, the EIV estimator for β is $\frac{\hat{\beta}^{OLS}}{1 + \sigma_\epsilon^2 / \sigma_{z^*}^2}$, with $\hat{\beta}^{OLS}$ the estimated slope from the regression of y on the observed z measured with error. The Stata command `eivreg` implements the Fuller correction for both single and multiple variable linear regression models. To estimate the error variance (reliability) of the Fuller correction, I use the reliability sample estimator from Wright, Erikson, and McIver (1985, p. 483–4), also used by Clinton (2006).

In Table 1, I present results from OLS (columns 1-3 and 7) and EIV (columns 4-6 and 8) models of Specification 3. Column one presents the relationship between support in the general electorate only and member vote choice. The coefficient of 0.37 indicates that, conditional on the party of the member and the roll call, on average a 10 percentage point shift in support for the bill in the member's general electorate increases the rate at which the member votes yea away from the party mean on that vote by 3.7 percentage points. Column two suggests that without accounting for support in the general electorate, 10 percentage points of support in the primary electorate goes along with 1.6 points of yea vote by members, all else equal. Column three includes support from both the primary and general electorate, which cuts in half the relationship to the primary electorate, but both coefficients remain statistically significant and substantively relevant. Changing support by 10 percentage points increases member yea votes by 3.3 (general) and 0.9 (primary) percentage points, all else equal. In the final row of the table, I calculate the balance of representation ratio, which indicates members are representing marginal changes in support in their general electorates about four times more than similar marginal changes in their primary electorates, all else equal.

Of course, sampling error in the estimates of x and z may attenuate correspondence with votes cast. In columns four through six, I implement the EIV specification. I estimate reliabilities of 0.95 and 0.88 for the two electorates, which lead to larger estimated influence of each electorate separately (columns four and five), but particularly influences the estimate of the primary electorate when both terms are in the model. In column six, I estimate that a 10 point change in support changes member yea rate by 3.4 (general) and 1.7 (primary) percentage points, all else equal. This indicates a balance of representation of 2 in favor of the general electorate.

In the final two columns, I limit analysis to cases where the primary and general electorate are on strictly opposite sides of the roll call, defined as 0.45 or less of one electorate and 0.55 or more of the other electorate supporting the yea position on the roll call.¹³ Members appear more representative on these roll call votes, with OLS estimates of the relationship of 10 point changes

¹³ I choose 45 and 55 so as not to classify, e.g., 50.1 to 49.9 support as "opposed" given sampling variability.

Table 1: Influence of primary and general electorate on member votes

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	OLS	OLS	EIV	EIV	EIV	OLS Electorate disagree	EIV Electorate disagree
Support among general voters	0.37** (0.05)		0.33** (0.05)	0.43** (0.04)		0.34** (0.06)	0.76** (0.18)	1.21** (0.27)
Support among primary voters		0.16** (0.03)	0.085** (0.03)		0.32** (0.05)	0.17** (0.06)	0.18* (0.09)	0.43** (0.16)
Constant	0.67** (0.04)	0.74** (0.04)	0.62** (0.04)	0.64** (0.03)	0.60** (0.04)	0.55** (0.04)	0.34* (0.14)	-0.044 (0.23)
Observations	4,538	4,538	4,538	4,538	4,538	4,538	734	734
R-squared	0.727	0.723	0.728	0.728	0.726	0.729	0.639	0.645
Roll-by-party FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Balance of representation			3.92			2.02	4.31	2.83
General reliability				0.95	0.95	0.95		0.95
Primary reliability				0.88	0.88	0.88		0.88

Robust standard errors in parentheses

** p<0.01, * p<0.05

Note: Dependent variable is yea (1) or nay (0) vote on bill. OLS coefficients with standard errors clustered on member in parentheses. Final two columns limited to cases where primary and general electorate disagree, with one electorate supporting bill at rate less than 0.45 and one supporting bill at more than 0.55.

in support of 7.6 and 1.8 percentage points, general and primary, and EIV estimates of 12.1 and 4.3 percentage points. The balance of representation is similar to the estimates in columns three and six with estimates of 4.3 and 2.8.

In Appendix Section A, I consider variation in representation across the characteristics of members. Two potential sources of heterogeneity in how individual members might balance representation noted above are heterogeneity in party coalition and in majority versus minority status. I find some evidence of heterogeneity in party and majority status in Appendix Table A1, with Democrats appearing to be more representative than Republicans and members of the majority more representative than those of the minority. Appendix Table A1 includes models by party so that representation can be evaluated without party fixed effects (as are included in Table 1). The overall results in Appendix Section A are consistent with the main results in Table 1. Members represent both electorates, but more the general than the primary electorate.

In summary, OLS and EIV models of member vote choice show that members of the House represent the interests of both primary and general electorates. Variation in support across 11 bills within each party predicts variation in how members vote on those bills within party. The more the member's primary electorate supports a bill, the more likely the member votes for that bill. Members appear about two to four times more responsive to marginal changes in the support for a bill among their general electorate than their primary electorate.

Robustness, endogeneity, and representativeness

In this section, I reference results in the Appendix that consider the robustness of the results to alternative measurement, to issues of endogeneity, and to the representativeness of the 11 roll call votes used in the main analysis. Across these alternative models, I find that members represent primary electorates and balance their representation more towards their general electorate. The purpose of these results is to lend support to the argued interpretation of the result and to generalizability, even if they are not as statistically certain as those above.

In Appendix Section B, I present results from a random effects model where the coefficients

of representation are allowed to vary across each roll call vote. On every vote but the Ryan budget, the balance of representation favors the general electorate over the primary electorate and across the roll call specific coefficients of representation, magnitude for the primary electorate is broadly consistent. This suggests the results are not driven by any individual roll call vote and that representation is consistent across these issues.

In Appendix Section C, I use preferences in the most geographically-proximate congressional district as instruments for the preferences of the primary and general electorate in the member's district in an instrumental variables (IV) model. The IV analysis is an alternative correction to sampling error (e.g., Fuller, 1987, p. 50–59) and, when assumptions hold, also corrects for endogeneity in the survey measures of preferences. The IV models control for party, so this specification addresses within-party endogeneity of district preferences. The two-stage least squares (TSLS) results in Appendix Table A3 indicate a strong relationship between the preferences of a member's general electorate and roll call votes cast. The estimated effect of the primary electorate is noisy and not statistically significant, but its point estimate of 0.17 is highly similar to the point estimates in Table 1. This analysis suggests that the relationship is causal from electorate preferences to member votes.

Appendix Section D considers whether representation for the 11 salient roll calls asked about by the CCES generalize to all final passage roll call votes cast by members in these two Houses. Clearly the architects of the CCES applied selection criteria different from a simple random sample in choosing these roll call votes. It may be that on these salient roll call votes members are particularly sensitive to one electorate or the other in making their choices. I first benchmark how unusual these 11 votes by comparing the yea/nay vote split to all non-unanimous votes cast in these two Congresses in Appendix Figure A1. Appendix Table A4 presents regression results from models similar to those above but with dependent variable a W-NOMINATE (Carroll et al., 2009; Poole et al., 2011; Poole and Rosenthal, 1997) summary of all final passage roll call votes for bills and conference reports, separately in the 111th and 112th Houses, instead of the yea/nay vote on each roll call. I select only final passage votes to make the set of roll calls scaled similar to

the final passage votes queried of CCES respondents in the issue-by-issue analysis above, rather than including all votes. The NOMINATE summary of member voting behavior on final passage bills is compared to the policy ideology of respondents to each CCES summarized with a grouped item-response theory (IRT) model proposed by Lewis (2001).¹⁴

The results for all final passage bills in Appendix Table A4 suggest a *larger* influence of the general electorate relative to the primary electorate than on the salient 11 single votes I analyze above. In other words, it appears that on the most salient partisan votes, variation in the within-party preferences of members' primary electorates is relatively more important than on the full set of final passage votes taken in the entire Congress. While the general electorate remains more important for both individual roll calls and summaries of all final passage votes, the preferences of primary electorates seem to be more relevant on the most salient individual votes.

Conclusion

Scholars have long observed that the preferences of American voters and the behavior of their representatives do not appear perfectly aligned. This disconnect seems to have grown in recent years with the polarization of the two parties in Congress. The composition of primary electorates may have changed with the sorting of the two parties in the electorate at a time corresponding to polarization in Congress, yet empirical evidence to date often finds little influence of primaries on representative behavior.

Using comprehensive data and a range of statistical methods, I find that members do represent primary voters with their roll call votes. The more the primary electorate supports a bill, the more likely the member votes for that bill, even controlling for party of member and preferences of general electorate voters on that bill. This implies that divergent primary electorates along with the need to win primary elections are part of the divergence in party behavior in the contemporary Congress. This effort suggests future research should continue on how and when primary elections influence the choices and behaviors of members of Congress. It also suggests the value of more historical analysis of congressional primary voting and consideration of when, where, and to

¹⁴ See Appendix Section E for details of the IRT model.

what degree primary electorates began (and continue) to sort with respect to party, ideology, and preferences on political compromise.

The focus here is on American primary elections, however the results are likely to speak to other legislative contexts. Primary elections are used in other nations and so the representation of primary voters may also be a feature of representation in those nations. The results also speak to other nomination systems where members must appeal to multiple constituencies, and the nomination constituency need not be a formal electorate of citizens. Even in systems without voters directly involved in nominations, when candidates must gain the nomination prior to the general election from a group (party bosses, donors, etc.) whose preferences diverge from the preferences of the general electorate, the nomination may distort representation of the general electorate. The design here could be applied in these other contexts to see how the balance of representation between nomination stages and election stages varies across places and time.

Although the finding of an influence of the preferences of primary voters on roll call votes is a key result of this article, a second result is that the balance of influence between primary and general voters in these Congresses tilts towards the general electorate. This is consistent with the existing theoretical work and explains why much empirical work has struggled to identify an influence of primary electorates. This tilt towards the general might also be appreciated as a positive for American representation if our normative benchmark of representation favors entire constituencies over partisan primary constituencies. But it also highlights the continued puzzle of a polarized Congress. If general electorates are more relevant to member choices than primary electorates on average, what about general electorates has changed to generate change in member divergence in the House? One possible culprit is the increasing homogeneity of House electorates, a topic that merits future study. A second possible culprit is that pressures external to within-district electoral considerations may be driving much of the polarization of Congress.

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Appendix

A Variation in representation member characteristics

In Table A1, I present results separately for Democratic and Republican members (columns 1-4) and for members of the House minority and majority parties (columns 5-8), pooled across these two Houses. In columns one and two, I find that Democrats represent both their primary and their general electorates with coefficients that are substantively and statistically significant. I find that the EIV correction flips the balance of representation for Democrats from about 3 to 1 in favor of the general electorate to about 1.5 to 1 in favor of the primary electorate, leaving uncertainty as to which electorate is more represented on these bills. For Republicans (columns three and four), both OLS and EIV find a significant (if smaller than for Democrats) influence of the general electorate, but a small and not statistically significant influence of the primary electorate.

A second factor that may influence the balance of representation is control of the House majority, the agenda control that goes along with such control leading to a choice about what bills to bring to the floor. In columns five through eight, I find that members of the majority appear to be more representative of their general electorates than members of the minority on the bills they bring to the floor (coefficients near 0.4 for majority and near 0.2 for minority), while representation of primary electorates is not statistically distinguishable between the columns. Without correction for measurement error, I find balance of representation for minority of 2.5 and majority of 4.5, while with correction both balances are a bit less than 2. In sum, Table A1 suggests consistent representation of both electorates with some heterogeneity by party and by holding of the majority, and a general trend of greater balance of representation in favor of member's general electorates.

B Variation in representation by issue

In Table A2, I present estimates from a random coefficients model where the coefficients of representation for both the general and the primary electorate are allowed to vary by issue.¹⁵ I sort the rows by the balance of representation, which most favors the general electorate on the Simpson-Bowles budget, Dodd Frank, and stimulus votes. The primary electorate appears most represented on the Carbon Tax and Korea free trade votes. Nonetheless, on every vote but the Ryan budget, the balance of representation favors the general electorate over the primary electorate, though note that no errors-in-variables correction is applied in this random effects model. Also of note is the relative consistency in magnitude of the coefficients on the primary electorate. Overall, there does not appear to be any particular pattern to the votes that gain more or less representation for either electorate, but for the differences between the 111th and 112th Congresses.

C Instrumental variables model

An instrumental variable approach to the balance of representation has two attractive features. First, it is an alternative to errors-in-variables to mitigate sampling error in electorate preferences (e.g., Fuller, 1987, p. 50–59). Second, when IV assumptions hold the procedure mitigates endogeneity between member votes and electorate preferences. One potential problem with the main analysis is that voter preferences are queried by the CCES surveys *after* the member votes on these rolls were cast. If voters take cues from their representatives about policy preferences (e.g., Lenz, 2012; Zaller, 1992), then CCES responses may be endogenous to the behavior of representatives.

¹⁵ The `xtrc` implementation in Stata.

Table A1: Influence of primary and general electorate on member votes, within-party and within-majority or minority

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dem OLS	Dem EIV	Rep OLS	Rep EIV	Minority OLS	Minority EIV	Majority OLS	Majority EIV
Support among general voters	0.43** (0.07)	0.30** (0.11)	0.14** (0.05)	0.17* (0.07)	0.22** (0.07)	0.23** (0.09)	0.39** (0.06)	0.37** (0.08)
Support among primary voters	0.13** (0.05)	0.47** (0.16)	0.021 (0.03)	0.023 (0.05)	0.086 (0.05)	0.13 (0.07)	0.085* (0.04)	0.23* (0.11)
Constant	0.53** (0.06)	0.31** (0.09)	-0.056** (0.02)	-0.066* (0.03)	-0.091** (0.03)	-0.10** (0.04)	0.59** (0.05)	0.48** (0.07)
Observations	2,353	2,353	2,185	2,185	1,935	1,935	2,603	2,603
R-squared	0.634	0.640	0.809	0.809	0.186	0.188	0.498	0.502
Roll FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Balance of representation	3.21	0.63	6.67	7.15	2.55	1.77	4.60	1.64
General reliability		0.95		0.95		0.94		0.95
Primary reliability		0.82		0.92		0.83		0.74

Robust standard errors in parentheses

** p<0.01, * p<0.05

Note: Dependent variable is yea (1) or nay (0) vote on bill. OLS coefficients with standard errors clustered on member in parentheses.

Table A2: Balance of representation by roll call vote

Roll call	Balance	General	(SE)	Primary	(SE)	MC GOP	(SE)
Simp Bowles budget	17.0	0.23	(0.10)	0.01	(0.04)	-0.05	(0.03)
Dodd Frank	9.5	0.36	(0.08)	0.04	(0.04)	-0.85	(0.03)
Stimulus	8.3	0.16	(0.06)	0.02	(0.04)	-0.92	(0.03)
SCHIP	6.4	0.29	(0.09)	0.05	(0.04)	-0.72	(0.04)
End DADT	6.4	0.43	(0.08)	0.07	(0.04)	-0.79	(0.04)
ACA	6.0	0.41	(0.08)	0.07	(0.05)	-0.76	(0.05)
Carbon tax	4.1	0.65	(0.09)	0.16	(0.05)	-0.61	(0.04)
Repeal ACA	3.5	0.11	(0.06)	0.03	(0.03)	0.94	(0.02)
Keystone pipeline	3.0	0.34	(0.10)	0.12	(0.04)	0.51	(0.04)
Korea free trade	1.7	0.28	(0.10)	0.17	(0.05)	0.61	(0.04)
Ryan budget	-0.5	-0.03	(0.07)	0.05	(0.04)	0.95	(0.02)

Note: Dependent variable is yea (1) or nay (0) vote on bill. Cell entries are the best-linear predictors from a random coefficients model pooling across roll calls but allowing coefficients to vary by roll call vote. The first column presents the balance ratio of the general coefficient to the primary coefficient. The second and third column are the best linear predictor coefficient and standard error for general preferences, fourth and fifth the same for primary preferences, and sixth and seventh the same for the Republican party indicator.

While endogeneity may not necessarily be inconsistent with some definitions of representation (e.g., in Achen, 1978), it would lead the estimate of balance of representation to measure the balance through which each electorate follows the votes of their members rather than the reverse.¹⁶

As instruments for the level of support on each bill, I use region-times-roll call fixed effects and the level of support for that bill in the primary and general electorate in the congressional district most proximate to the member's district.¹⁷ For example, the closest population centroid to the 3rd district of Texas is the 32nd district of Texas with a distance of 14.3 miles. As instruments for the level of support on each bill in the primary and general electorates of TX-3, I use South-region times roll call fixed effects and the level of support on those same bills in the primary and general electorate of TX-32. I match the primary support to the member's party no matter who represents the other district. These instruments are likely to meet the assumptions of IV. Regional fixed effects and support in the most proximate district are likely correlated with support in the most proximate

¹⁶ Note, however, that the balance in favor of the general electorate that I find seems inconsistent with the follow the leader argument. If voters were following members, it seems likely that partisan primary voters would more closely follow the behavior of their members than general voters, which would lead to more apparent responsiveness to primary than general voters.

¹⁷ I measure proximity using the Haversine formula to calculate distance between the latitude-longitude coordinate of the population centroids of each congressional district. The closest district is the district with the minimum distance. Population centroids for 111th districts downloaded from <http://mcdc.missouri.edu/websas/geocorr12.html>.

Table A3: Instrumental variables model of primary and general electorate on member votes

VARIABLES	(1) IV	(2) Reduced form	(3) First stage General support	(4) First stage Primary support
Support among general voters	1.03** (0.19)			
Support among primary voters	0.17 (0.24)			
Closest CD: Support among general voters		0.16** (0.04)	0.18** (0.01)	-0.0081 (0.02)
Closest CD: Support among primary voters		0.090** (0.03)	-0.015 (0.01)	0.027 (0.01)
Constant	0.18 (0.20)	0.71** (0.04)	0.47** (0.02)	0.85** (0.02)
Observations	4,400	4,400	4,400	4,400
R-squared	0.705	0.729	0.679	0.782
Roll-by-party FEs	Yes	Yes	Yes	Yes
Balance of representation	6.27	1.74		
Roll-by-region FEs			Yes	Yes

Robust standard errors in parentheses

** p<0.01, * p<0.05

Note: Dependent variable is yea (1) or nay (0) vote on bill. TSLS coefficients with standard errors clustered on member in parentheses.

district due to the geographic clustering of interests and politics in the U.S., but are not likely to directly affect the member's behavior conditional on party-roll-call fixed effects.

The first column of Table A3 presents a two-stage least squares (TSLS) estimate, as before with robust standard errors clustered on the member. Columns two, three, and four present the reduced form and first stage estimates, showing that (a) the instruments are related to the outcome and (b) the instruments are correlated with the endogenous regressors. The TSLS estimates in column one indicate a strong relationship between the preferences of a member's general electorate and the roll call votes cast, with a point estimate more in line with perfect representation (β near 1). The estimated effect of the primary electorate is noisy and not statistically significant, but its point estimate of 0.17 is similar to the point estimates in Table 1. In column four it is clear that the proximate CD support in primary electorate is not as strongly related to primary support as the proximate CD general support is to general support, which causes variance in the TSLS estimate.

With respect to balance of representation, the TSLS model in column one indicates a balance of more than 6 to 1 favoring the general over the primary electorate. In sum, the IV point estimates for primary electorates are of relatively consistent size across subsets and relative to the OLS and EIV estimates above, but not statistically significant. Balance of representation is correspondingly noisy, but continues to indicate balance towards general electorates.

D Representativeness of votes

To this point I have analyzed the 11 roll call votes queried in the 2010 and 2012 CCES that were cast in Congresses contemporaneous to those surveys. Clearly the architects of the CCES applied selection criteria different from a simple random sample in choosing these roll call votes. Most likely, these roll call votes are some of the most salient votes cast by members. It may be that on these salient roll call votes members are particularly sensitive to one electorate or the other in making their choices. In this section, I provide some characterization of how unusual these 11 roll call votes are, and then calculate a balance of representation on ideological summaries of votes on all final passage bills and electorate preferences.

I first benchmark how unusual these 11 votes by comparing the yea/nay vote split compared to all non-unanimous votes cast in these two Congresses. In Figure A1, I place the roll call votes used in this analysis in the context of all contested roll call votes cast in the 111th and 112th House. The density plots the full distribution of rate yea across the roll call votes in the two congresses that garnered less than 95 percent in favor. I plot as tick marks the yea rates for the 12 bills used in this analysis. All but the Simpson Bowles budget vote passed the chamber, but the bills do cover a reasonable range of the observed distribution. The set of bills is missing the coverage of the second mode of the full distribution, that right below the 50 percent line. If responsiveness is notably different on the votes that fall below the passage threshold, I may be missing that feature of congressional representation. Compared to the overall distribution, it is clear that some of the distribution to the left of 0.5 (votes that just barely fail) are not represented in these 11 votes. But the votes, while clustered, do have some spread relative to the full distribution.

As an alternative, in Table A4 I present results from models similar to those above but with dependent variable a W-NOMINATE (Carroll et al., 2009; Poole et al., 2011; Poole and Rosenthal, 1997) summary of all final passage roll call votes for bills and conference reports, separately in the 111th and 112th Houses, instead of the yea/nay vote on a specific roll calls. I select only final passage votes to make the set of roll calls scaled similar to the final passage votes queried of CCES respondents in the issue-by-issue analysis above, rather than including all votes.¹⁸ I relate the NOMINATE summary of member voting behavior on final passage bills to a scaled policy ideology of the respondents to each CCES. To summarize the policy ideology of each respondent to each of the two surveys, I estimate the grouped item-response theory (IRT) model proposed by Lewis (2001) on expressed preferences over a set of policy issues. I use all of the roll call votes queried about in each CCES as well as other policy preferences not specific to any roll call vote as indicators for the model.¹⁹ Full details of the IRT model and estimation are in Appendix Section E.

The regression specifications in Table A4 are the same as those estimated above. In the first column, the OLS estimates find statistically significant representation of general election voters and a positive, smaller, but not significant representation of primary voters, with a balance of rep-

¹⁸ I selected votes by identifying all roll calls where the motion question included phrases such as “on passage,” “agreeing to conference report,” or “concur with the Senate amendment.” This limited the roll call matrices to 27.4 and 20.7 percent of all votes in the 111th and 112th Houses. Details available from the author on request. In practice, the NOMINATE scores on final passage votes correlate with DW-NOMINATE scores at $r = .969$ (111th) and $.963$ (112th).

¹⁹ I identified 17 questions from each survey that serve as the items in the models, the full list of which are available in Appendix Section E. I group respondent ideal points by the intersection of three characteristics: their state of residence, their partisanship (coded three ways, with leaners collapsed as partisans), and their primary turnout.

Table A4: Member final-passage NOMINATE by policy ideology of primary and general electorate

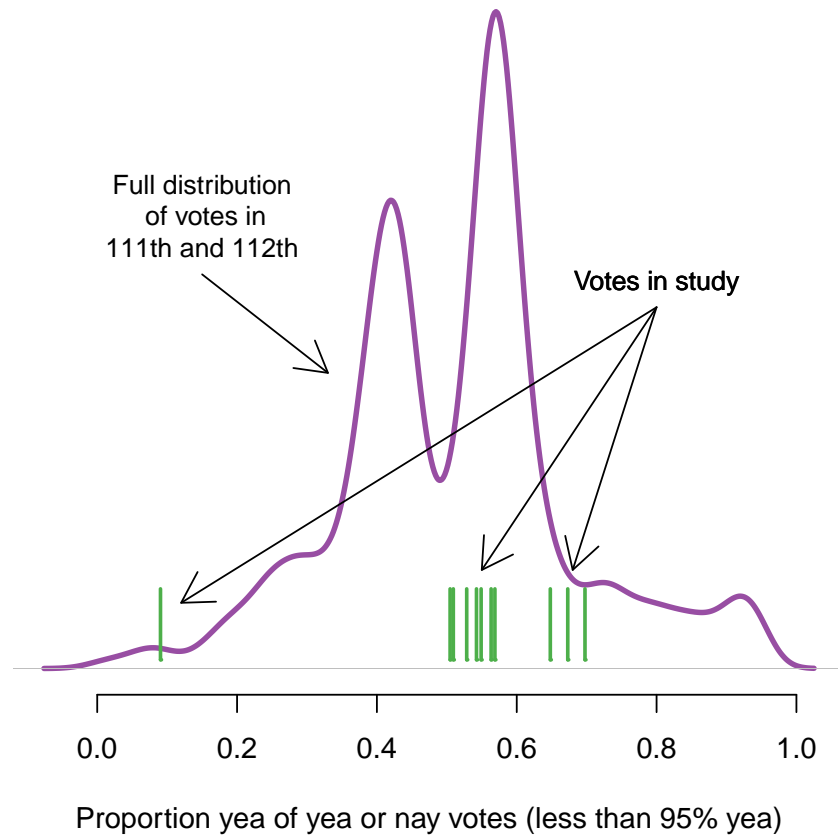
VARIABLES	(1)	(2)	(3)	(4)	(5)
	OLS	EIV	First stage General support IV	First stage Primary support IV	IV
Policy ideology general voters	0.32** (0.02)	0.34** (0.04)			0.37** (0.07)
Policy ideology primary voters	0.033 (0.02)	0.053 (0.05)			0.078 (0.09)
Member GOP	0.96** (0.04)	0.92** (0.09)	0.32** (0.06)	1.61** (0.07)	0.86** (0.16)
Closest CD: Policy ideology general voters			0.33** (0.03)	0.042 (0.04)	
Closest CD: Policy deology primary voters			-0.039 (0.03)	0.096* (0.04)	
Constant	-0.75** (0.02)	-0.73** (0.04)	-0.17** (0.04)	-0.84** (0.05)	-0.71** (0.08)
Observations	811	811	801	787	786
R-squared	0.925	0.927	0.481	0.921	0.923
Party-by-congress FEs	Yes	Yes	Yes	Yes	Yes
Balance of representation	9.74	6.47			4.75
General reliability		0.94			
Primary reliability		0.95			
Region-by-congress FEs			Yes	Yes	

Standard errors in parentheses

** p<0.01, * p<0.05

Note: Dependent variable is first dimension W-NOMINATE scaling of final passage bills in the 111th and 112th Houses, scaled using the defaults in the Poole et al. (2011) $w_{nominate_R}$ package. OLS coefficients with standard errors in parentheses. Districts represented by more than one member in either congress are excluded (17 total).

Figure A1: Comparison of roll call votes considered versus all roll call votes



Note: Kernel density plots the distribution of yea vote rates across all votes in the 111th and 112th House that passed with less than 95 percent voting yea (data from <http://www.voteview.com>). Tick marks indicate the yea rates of the 11 roll call votes considered in this analysis.

resentation of 9.7. Applying the EIV correction in column two increases the relationship to primary policy ideology but does not come closer to statistical significance. Balance of representation falls to 6.5. The third and fourth column are the first stage for the IV model, where the instruments for general and primary support are shown to predict the endogenous regressors. The IV estimates in column five replicate the connection between the policy ideology of general voters and member roll call behavior, and the estimated influence of the primary electorate is larger than before yet with a larger standard error. The ratio of the two suggests a balance of representation of 4.8.

Although the estimates of the influence of the primary electorate in Table A4 are uncertain, the overall pattern suggests a *larger* influence of the general electorate relative to the primary electorate on member roll call voting behavior across all final passage votes than on the salient 11 single votes I analyze above. In other words, it appears that on the most salient partisan votes, variation in the within-party preferences of members' primary electorates is relatively more important than on the full set of final passage votes taken in the entire Congress. While the general electorate remains more important for both individual roll calls and summaries of all final passage votes, the

preferences of primary electorates seem to be more relevant on the most salient individual votes.²⁰

E IRT model of conservatism

In this section, I describe how I summarize individual-level policy ideology for CCES respondents who answered a series of policy questions. I aggregate responses to multiple policy questions into a single summary value of conservatism through an item-response theory (IRT) model. Aggregating across multiple responses mitigates measurement error and mimics the aggregation across roll call votes used to summarize roll call voting behavior in congress with NOMINATE.

To characterize the policy conservatism for each respondent to the 2010 and 2012 CCES, I estimate the grouped IRT model proposed by Lewis (2001) on respondent expressed preferences over a set of policy issues. Each CCES asked respondents how they would vote on a set of roll calls actually considered in the House and Senate, as well as other policy preferences not specific to any roll call vote. I identified 17 questions from each survey that serve as the items in the model. For 2012, the questions query preferences about abortion, the war in Iraq, environment vs jobs, the Ryan budget, the Middle Class Tax Cut, the Tax Hike Prevention Act, birth control exemption, Keystone pipeline, the Affordable Care Act, ending Don't Ask Don't Tell, the war in Afghanistan, gun control, climate change, immigration, gay marriage, affirmative action, and balancing the budget. For 2010, the questions query preferences about gun control, climate change, immigration, abortion, environment vs jobs, gay marriage, affirmative action, balancing the budget, the Stimulus, SCHIP, Carbon Tax, Affordable Care Act, Kagan nomination to the Supreme Court, Dodd Frank Act, ending Don't Ask Don't Tell, funding stem cell research, and the Troubled Asset Relief Program.

The Lewis (2001) model allows categorical, rather than binary responses, so I use all response categories available in the CCES on these questions. The model estimates group-specific intercept shifts and variances for the distributions of respondent ideal points. I group respondent ideal points by the intersection of three characteristics: their state of residence, their partisanship (coded three ways, with leaners collapsed as partisans), and their primary turnout. Thus, for example, the model can estimate a different intercept and variance for the ideal points for respondents from New York who identify as Democrats and voted in the 2010 congressional primary relative to respondents from New York who identify as Democrats and did not vote in the primary.

The model estimates the item parameters and the group distributions. To calculate the ideology of each individual, I calculate the expected a posteriori ideal point for each respondent, conditional on their responses, the estimated item parameters, and their group membership (see Lewis, 2001, p. 279 for details). As with all ideal point models, the latent scale of ideology is only identified up to an affine transformation. I post-process the ideal points to have mean zero and unit variance for each survey.²¹ My 2010 estimates correlate with the IRT estimates of Tausanovitch and Warshaw (2013) for 2010 CCES respondents at $r = 0.961$.

The ideology estimates correspond well to standard theories of ideology. They correlate with partisanship and self-reported ideology, and they are superior predictors of vote choice than self-reported ideology: The R^2 of a linear model predicting Democratic House vote in 2010 with my

²⁰ That said, there are other differences beyond the set of roll call votes analyzed between the estimates in Table A4 and the roll-call specific models, suggesting caution should be applied in interpreting differences in coefficients.

²¹ Other estimation choices required for the Lewis (2001) EM implementation are number of quadrature points (for the approximation of group normal distributions), and convergence criteria. I use five quadrature points and iterate the EM algorithm until the maximum parameter change across all item and group parameters is less than $1e-5$.

estimate of ideology, partisanship, and state fixed effects is 0.87, compared to 0.85 with self-reported ideology (don't know respondents set to moderate). When both self-reported and IRT ideology are included in this model, the coefficient on self-reported ideology is 28 percent of its size without IRT ideology in the model, while the coefficient on IRT ideology is 88 percent of its original size. These same numbers for 2012 are R^2 of 0.78 versus 0.76, and coefficient ratios of 18 percent self-reported versus 96 percent my estimate.²² This suggests my estimate of conservatism is more closely related to vote choices than self-reported ideology, and so is more closely related to the preferences that motivate member behavior under an electoral connection.

²² Regression results available from the author on request.