

# Primary Competition and Partisan Polarization in the U.S. Senate<sup>1</sup>

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## Abstract

Many observers and scholars argue that primary elections are one cause of polarization in U.S. politics. We exploit special features of the U.S. Senate, and a new data set on primary elections, to test this hypothesis. We find little evidence that primary competition is related to partisan polarization in Senate roll call voting. We also find little evidence that “extreme” roll call voting records are positively correlated with primary election outcomes. On the other hand, “extreme” roll call voting are negatively correlated with general election outcomes.

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# 1. Introduction

Party polarization in the U.S. Congress – both the Senate and the House of Representatives – has risen sharply over the past three decades. The ideological division between the parties is now at a post-war high, and a sizeable literature attempts to explain it. Perhaps the central puzzle in this literature is the apparent disjuncture between the highly polarized Congress and the relatively moderate public. As Fiorina et al., (2006) conclude “There is little indication that voters are polarized now or that they are becoming more polarized” (page 165).

Primary elections have been singled out as a chief suspect in explaining how Congress became deeply divided when the public is not. The need to win primary elections creates a potential motivation for Members of Congress to take extreme policy positions in order to satisfy their party electorates (e.g., Burden 2001; Fiorina et al., 2006; Fiorina and Levendusky, 2006; King, 2003). Two factors are at work. First, candidates seeking their party’s nomination take positions that satisfy their party’s primary voters. Since the primary electorate is assumed to have more extreme preferences than general election voters, candidates with positions that are closer to their primary electorates are more likely to win. Second, party activists are particularly important in primary elections, as they are more likely to vote in primaries than other partisans and give money during primary elections.<sup>2</sup> Theoretical models where candidates compete in primary and general elections but have more polarized primary electorates formalize this idea that primary elections lead to polarization (e.g. Aranson and Ordeshook, 1972; Coleman, 1972; Owen and Grofman, 2006).

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<sup>2</sup>See, e.g., Sinclair (2006, pages 29-30). Galston and Nivola (2006) speculate that this is particularly true as districts become dominated by one party: “a profusion of one-party districts drives moderates out of Congress. In such districts, candidates have little incentive to reach out to voters across party lines. The imperative instead becomes to appeal to the base and preempt possible primary challenges from the extremes. The direct primary (or threat thereof), not the general election, becomes the defining political event” (*Red and Blue Nation*, page 25). In reviewing the various explanations for polarization, Fiorina and Levendusky (2006) write: “The structure of American electoral institutions amplifies the influence of such [committed] voters – and their impact is felt most in primary elections;” and “Our (tentative) view is that primaries are a more likely arena in which to find explanations of political polarization” (page 70). Fiorina et al. (2006) point to primary election reform, such as “blanket” primaries or run-off primaries, to help produce moderate candidates. They discuss the fortunes of the California Republican Party in detail. “In less than a decade California had changed its hue from dark red to dark blue. What happened? ... In primary elections California Republicans nominate hard-core conservatives whose appeal is too limited to defeat even flawed Democratic candidates” (page 106).

An obvious problem with this explanation is that most states had adopted direct primaries by the 1930s, and polarization declined from the 1940s through the 1960s and began to rise in the 1980s. In response, scholars have argued that the impact of primaries differs over time, because the parties primary electorate changed. In particular, primary electorates sorted ideologically in the 1980s and 1990s (Fiorina et al., 2006) and primary turnout declined, further increasing the pull of activists (King, 2003). Hence, although the general electorate has not become more ideologically polarized, the primary electorates may have. Survey evidence shows that voters do appear to be ideologically sorting into parties to a greater degree during the period Congress became more polarized. Turnout may have further magnified this gap. Empirically it does appear primary turnout has been declining, but whether this has affected the ideological composition of the primary voters is still open to debate.

There is a clear logic behind the argument that primary electorates cause polarization, and there is some circumstantial evidence consistent with the claim. Direct evidence of a connection has been elusive. Gerber and Morton (1998) provide some evidence by exploiting the connection between primary laws and the partisan composition of voters eligible to vote in primaries. They find that Members of Congress nominated in “closed” primaries tend to have policy positions that are farther from the preferences of their general electorate than those nominated in “open” primaries. However, as McCarty, et al., (2006) point out, the effect is relatively small. They go on to write that “the evidence for the culpability of primaries is very thin” (page 70). Other recent empirical work has also found little connection between polarization and primaries in the U.S. House between 1992 and 2006 (Pearson and Lawless, 2007).

To examine the connection between primary elections and congressional polarization, we consider two key questions. First, is the ideological gap between Republicans and Democrats in Congress higher when the legislators face more competitive primary elections? Sections 2 and 3 examine the correlations between competition and polarization for individual members and for Congress as a whole; the presence of such a correlation is central to the case that primaries cause polarization.

Section 4 focuses on a second question: do the benefits to ideological extremism in primary elections outweigh the costs of ideological extremism in general elections? In this section, we examine the relationship between DW Nominat scores and general election competition, and compare this with the relationship between DW Nominat scores and primary election competition.

Although both of these issues have been discussed in the existing literature, previous studies have been criticized for problems of measurement and research design. This paper addresses these concerns in three ways. First, we use a new measure of primary competition based on primary election returns for all statewide offices. This is less likely to be affected by the endogeneity concerns than other measures commonly used in the literature.<sup>3</sup> Second, we use exit poll surveys and turnout data to measure directly the degree of polarization in primary electorates. Third, we exploit the “multi-member district” feature of the Senate to control for certain unobserved characteristics of senators’ primary and general electorates that may affect polarization. The third point implies that our analysis is less likely to suffer from omitted variable bias than many previous studies.

The bottom line: We find no evidence that primaries contribute substantially to polarization in roll call voting in the U.S. Senate. Moreover, we find evidence that senators have an incentive *not* to cater to extremist primary voters. Senators do gain votes in the primaries by taking relatively extreme positions, but they do lose significant support in the general election from such a strategy.

## 2. Senate Polarization and Primary Competition

Roll call voting scores have become a common method for measuring the increase in partisan polarization in the U.S. Congress. Figure 1 plots the gap in DW-Nominat scores between the average senator by party outside the south. The figure illustrates the rise in the partisan polarization of Senate roll call voting since the 1970s. Figure 1 also illustrates

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<sup>3</sup>Existing studies of primary competition and congressional roll call voting tend to use competition in congressional primaries (e.g., Burden, 2004; Pearson and Lawless, 2007). One concern with this measure of primary competition is that the expected policy position of congressmen may affect whether the congressmen face a serious challenge in their primary.

that a similar pattern of partisan polarization exists in even if we focus on senators in split delegations (i.e., delegations with one Democrat and one Republican).<sup>4</sup>

To examine whether primary competition provides an incentive for senators to take more extreme positions, we would ideally like to compare situations with and without primaries. We cannot do this, however, since all states now use primaries to nominate senate candidates. Instead, we focus on the variation in the level of primary competition both across and within states and also across elections. The logic is that senators in states with competitive primaries have an stronger incentive to take roll call voting positions which are in line with their primary electorates to in order avoid losing in their next primary election.

Our main focus is on whether the degree of primary competition in a state is related to the polarization of that state’s Senate delegation. The differences in primary competition across states may arise due to state-specific characteristics, such as ballot access laws, campaign finance laws, other elections laws such as the use of pre-primary conventions, and the strength and structure of party organizations. We would expect this variation across states to affect the incentives senators have to respond to their primary electorate irrespective of whether the senators personally face primary challengers. Furthermore this variation is unlikely to be strongly related to individual senator’s roll call voting records, which avoids some of the problems with using primary competition in senate elections themselves.

We measure the competitiveness of the primary environment using the average level of primary competition in previous primary elections for *non*-Senate statewide offices. We construct our measure using a new data set of primary election outcomes for all statewide offices.<sup>5</sup> We use two different methods for measuring of primary competition: (i) the average number of incumbents contested in previous primary elections; (ii) the average number of incumbents who win less than 60% of the vote in previous primary elections. We use a six-year window – when predicting roll call for the congress elected in year  $t$ , we use the primary elections from years  $t-6$  to  $t-1$ .<sup>6</sup>

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<sup>4</sup>We exclude the south in order to make the comparison with split delegations more meaningful. Prior to 19xx there were almost no split delegations in the south.

<sup>5</sup>See Ansolabehere et al. (2006) for a description of this data set.

<sup>6</sup>We checked the sensitivity of our estimates to the length of the window, and also to the choice of which races are used – all races, incumbents-contested races only, and open seat races – in constructing the

We also present analyses focusing on the primary competition the senators themselves face. One possibility is that senators' roll call voting may be most responsive to their own primary election threats. This is the measure most commonly used in the existing literature (e.g., Burden, 2004; Pearson and Lawless, 2007). However, as we mentioned above, the competition congressmen face in primary elections may be related to the congressmen's own policy positions. If more extreme politicians face less competition, then we suspect the estimates would be biased downwards. We therefore also present results using competition for non-Senate statewide offices as an instrument for Senate primary competition.

This section is divided into two parts to examine whether congressional polarization is occurring through the adaptation of incumbent senators' roll call voting positions or through the replacement of more moderate senators. We first examine whether changes in the difference between Democratic and Republican senators' roll call voting records within a state is related to the competitiveness of primary elections in the senators' state. We then move to a discussion of whether the difference between Democratic and Republican senators' roll call voting positions is related to the competitiveness of primary elections when a senator is first elected.

### *2.1 Adaptation and Competitive Primaries*

One potential explanation for the increasing polarization in Congress is that incumbent congressmen adjust their roll call voting positions in response to changes in the competitiveness of primary elections. This is the adaptation argument.

We begin with two simple but highly informative scatterplots. If incumbents are changing their behavior in response to primary competition then we would expect that incumbents should be facing more primary challengers during the period when Congress is most polarized. Figure 2 plots the two measures of primary competition for races with incumbents. Figure 2 also includes separate lines for primary elections for non-Senate statewide offices and for the Senate. As the figure shows, the degree of primary competition faced by incumbents has

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primary competition measures. The substantive interpretation of the findings reported below are robust to these changes in measurement.

been *decreasing* over time.<sup>7</sup> These trends raise immediate doubts regarding the relationship between primary competition and polarization of incumbents.

Figure 3 plots the gap in DW-Nominate scores between senators for the two parties against our two measures of primary competition. We first average the DW-Nominate scores for all the senators from the same party within a decade and then use the absolute value of the difference between the average DW-Nominate score for each party. The two measures of competition are also averaged over each decade.<sup>8</sup> If incumbent senators' roll call voting records are responding to competition in the primaries then we would expect to observe a positive relationship between the average levels of primary competition and the average gap in senators' roll call voting positions. However, the simple scatterplots in Figure 3 do not reveal any readily observable correlation between these two measures. If anything, the correlation appears negative.

To estimate the relationship between congressional polarization and primary competition we run the following regression:

$$G_{it} = \alpha_i + \theta_1 C_{it} + \gamma_t + \epsilon_{it} \quad (1)$$

where  $G_{it}$  is the gap in DW-Nominate scores between the Democratic and Republican senators in state  $i$  in congressional session  $t$ ;  $C_{it}$  is the measure of primary competition in state  $i$  at time  $t$ ; and  $\alpha_i$  and  $\gamma_t$  are state and Congress fixed effects, respectively.

We focus on split-party Senate delegations since in these cases we have a DW-Nominate score for senators from each party. The gap in DW-Nominate scores for split delegations takes into account state and year specific factors. Primary competition is measured using elections to all non-Senate statewide offices which include an incumbent. As noted above, we use the proportion of races that are contested and the proportion of races in which the winner won by less than 60% of the vote. These measures reflect the competitiveness of the primary election environment in each state. We also included state fixed effects in some of the specifications.<sup>9</sup> The results show no statistical significant correlation between either

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<sup>7</sup>This is consistent with the patterns described in Ansolabehere, et al., (2006).

<sup>8</sup>Here we use both open seat and incumbent-challenger primaries in our measure of competition. The figures do not reveal any significant association when we limit the primary competition measure to either open seat or incumbent-challenger elections.

<sup>9</sup>We also allowed the state fixed effect to vary by decade but this did not significantly change the results.

measure of primary competition and the partisan gap in DW-Nominate scores for senators in states with split party delegations.

The middle rows of Table 1 present the results using competition for Senate elections instead of previous statewide offices. In this case primary competition is either an indicator variable for whether the senator was contested in his/her primary race, or an indicator variable for whether the senator won his/her primary race by less than 60% of the vote. Again we find no evidence for a statistically significant association between this variable and the DW-Nominate gap in split-party Senate delegations.

The bottom rows of Table 1 present the results using previous primary contestation for non-Senate statewide offices as an instrument for Senate contestation. This is to address the potential effect incumbents' roll call voting positions may have on the degree of competition they face in their primary election. As we might expect, the coefficient on contestation increases in magnitude but the standard errors also increase.<sup>10</sup>

While these results are statistically insignificant, are they, perhaps, substantively significant? A one standard deviation increase in primary contestation for other statewide offices is associated with a 0.01 to 0.02 increase in the gap in DW-Nominate scores of split delegations depending upon the specification. This is less than 3% of the average gap in the DW-Nominate scores of these split delegations.<sup>11</sup> Even for close primary elections, a one standard deviation increase in close primary competition is associated with an increased gap in DW-Nominate scores that is less than a 5% of the average gap in DW-Nominate scores for split delegations. Having a competitive Senate election is associated with at most a 0.07 larger gap in DW-Nominate scores. The relationship appears stronger when we use primary contestation for non-Senate statewide offices as an instrument for close Senate primary competition, but the coefficients are quite imprecisely estimated.

## *2.2 Replacement and Competitive Primaries*

A number of scholars have noted that changes in representatives' roll call voting records

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<sup>10</sup>The results are not in the table but are available upon request.

<sup>11</sup>Even if we add one standard error to the point estimate for primary competition the substantive relationship is still quite small – i.e. less than 5% of the average gap in the DW-Nominate scores of split delegations.



are more likely to occur through replacement than through adaptation (Stone, 1980; Poole, 1997). Thus we examine whether the degree of primary competition a senator faced in his/her first election affects the partisan gap in roll call voting positions with states' Senate delegations. Theriault (2006) claims that congressional polarization is due mainly to replacements.

As above, we begin by examining a few simple scatterplots. Figure 4 plots the level of primary competition for open seats over time. Primary competition for open seats differs from the competition for incumbents in two important respects. First, the overall level of competition is higher for open seats. Second, the level of competition has remained relatively stable over time. The proportion of contested races has actually increased slightly over time. While primary competition for open seats has not increased as dramatically as the gap in senators' roll call voting scores, at least not moving in the opposite direction, as is the case for primaries involving incumbents shown in Figure 2 above.

In Figure 5 we plot the difference between the DW-Nominate score for senators and the senators they replace against the difference in primary competition the senators faced when first elected. The senators' DW-Nominate scores are for the Congress just after they are first elected. Again there is no obvious pattern of replacements having more extreme DW-Nominate scores when they face more competitive primary election environments than the senators they are replacing.

We provide another test of whether congressional polarization and primary competition are related by estimating the following specification:

$$N_{it} = \alpha_i + \theta C_{it} + \gamma_t + \epsilon_{it} \quad (2)$$

where  $N_{it}$  is DW-Nominate score of a freshman senator in state  $i$  in the first two years following their first election at time  $t$ ;  $C_{it}$  is again the measure of primary competition in state  $i$  at time  $t$ ; and  $\alpha_i$  and  $\gamma_t$  are state and year fixed effects, respectively. We estimate equation (2) separately for Democrats and Republicans.

The top rows of Table 2 present the results using previous primary election competition for non-Senate statewide offices. As above, primary competition is measured by the proportion of races contested, or the proportion of races where the winner receives less than 60% of

the vote. We find no evidence for a statistically significant relationship between the DW-Nominate score of senators in their freshman term and the level of primary competition during their first election.<sup>12</sup> The point estimate of  $\hat{\theta}$  is also relatively small.

In the middle rows of Table 2 we present the results using the indicator variable for whether the senator faced a primary election threat in his/her first election. Again we find no evidence that Senate primary competition is related to the DW-Nominate scores of freshman senators. As the bottom rows of Table 2 illustrate, this is also true even when we use the previous primary competition for non-Senate statewide office as an instrument for Senate competition.

In addition to being statistically insignificant, the estimates in Table 2 are also substantive insignificant. A one standard deviation change in primary contestation is associated with shift in DW-Nominate scores which is less than 8% of the average score. The relationship is even weaker for a one standard deviation change in contestation of close primary election.

### 3. Congressional Polarization and Electoral Polarization

A crucial component of the folk wisdom regarding the link between congressional polarization and primary elections is that primary electorates are more polarized than general electorates and perhaps even more polarized than partisans. V.O. Key (1956) wrote:

The effective primary constituency of the state as a whole may come to consist predominantly of the people of certain sections of a state, of persons chiefly of specified national origin or religious affiliation, or people especially responsive to certain styles of political leadership or shades of ideology, or of other groups markedly unrepresentative in one way or another of the party following.<sup>13</sup>

However, the empirical evidence that primary election voters are more extreme than general election voters is mixed. Whether one observes a difference in the ideological positions of these two electorates depends in part upon the states and the elections investigated

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<sup>12</sup>We also ran specifications allowing the state fixed effects to trend. We found similar results with this specification; however, with the small number of observations, these models are particularly not very well identified.

<sup>13</sup>Key as quoted in Crotty and Jackson (1985, 86).

(e.g., Ranney and Epstein, 1966; Crotty and Jackson, 1985; Lengle, 1981; Norrander, 1989; Abramowitz, 2008).

Using the *American National Election Studies* (ANES) surveys of voters between 1964 to 1992, we can see that partisans in both primary and general elections appear to have become more polarized over time.<sup>14</sup> In Figure 6 we plots three lines: (i) the difference in the ideological feeling thermometer scores for respondents who voted in the Republican versus Democratic primary elections; (ii) the difference the ideological feeling thermometer scores for respondents with strong party identifications who voted in the general elections; (iii) the difference in the perceived positions of the Democratic and Republican Parties. As Figure 6 illustrates, the gap in ideology is slightly larger in primary elections but all three lines follow a similar trend. The difference in polarization between partisans in the primary and general electorates varies over time.

In this section we examine whether the polarization in the electorate is related to the partisan polarization in Congress and we exploit the variation in the primary electorates and Senators' positions across states and over time. Since the ANES sample size is not large enough to reliably classify states according to the polarization of their primary electorates, we use exit poll survey data and primary election turnout data.

### *3.1 Ideologically Polarized Primary Electorates, 1992 to 2004*

Ideally we would like to use survey data from primaries elections for statewide office. However, since these data are not available we identify states with relatively polarized primary electorates using presidential election exit poll survey data. In these polls respondents were asked their ideological position on a three point scale.<sup>15</sup> Assuming that the presidential and non-presidential primary electorates have similar ideological leanings, we would expect states with more polarized primary electorates to also have more polarized Senate delegations.

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<sup>14</sup>The ANES survey asks respondents their self-identified ideological position on a one to seven scale. The survey also asks respondents how strongly they identify with a political party and whether they voted in the primary election.

<sup>15</sup>For the general election we measure the gap between respondents claiming to vote for the Democratic candidate and those claiming to vote for the Republican candidate.

As in previous section we begin with a simple scatterplot. We plot the average ideological gap between the Democratic and Republican primary electorates between 1992 and 2004 against the average DW-Nominate gap between senators from the two parties during this same period. According to the logic outlined in informal claims in the literature we should expect to observe a positive relationship between the ideological gap in the primary electorate and the DW-Nominate gap between senators. Figure 7 reveals no obvious relationship between these two.

We provide a simple test of whether congressmen are responding to the polarization in the primary electorate and also incorporate primary competition as another contributing factor using the following specification:

$$G_{it} = \alpha_i + \theta_1 C_{it} + \theta_2 P_{it} + \theta_3 C_{it} * P_{it} + \gamma_t + \epsilon_{it} \quad (3)$$

where  $G_{it}$  is the gap in DW-Nominate scores between the Democratic and Republican senator in state  $i$  in Congress  $t$ ;  $C_{it}$  is the measure of primary competition in state  $i$  in the six years prior to the election to Congress  $t$ ;  $P_{it}$  is an indicator variable for whether state  $i$  has a relatively large average gap in the ideological position of its primary electorate between 1992 and 2004; and  $\alpha_i$  and  $\gamma_t$  are state and year fixed effects, respectively. Since we only have exit poll data for limited years we focus our analysis on the period from 1988 to the present.

As the results in Table 3 suggest, there is at best mixed statistically significant evidence that the relationship between primary competition the partisan differences in split-party Senate delegations is affected by the relative degree of polarization in the primary electorates. The coefficient on the interaction between primary competition and polarized primary electorate is positive and statistically significant only when state fixed effects are not included.

The substantive significance is relatively small. When only year effects are included in the specification, a one standard deviation increase in primary competition in a state with a polarized electorate is associated with an increase in the average gap in DW-Nominate scores for split-party Senate delegations of less than 16%. When state fixed effects are included this association becomes negative – i.e. more primary competition leads to a *smaller* gap in DW-Nominate scores in split delegations. The relationship is slightly stronger when we use primary competition in Senate elections.

### 3.2 Turnout and Polarized Primary Electorates

Another common claim in the literature is that the polarization in the primary electorate is related to turnout in primary elections (e.g., King, 2003). When turnout declines, only the most extreme voters are assumed to participate in the primary elections. Turnout for primary elections for statewide offices does appear to have declined during the period when Congress appears to have become more polarized. Figure 8 plots turnout for statewide primary elections as a proportion of total population averaged by decade. We use the highest turnout among the offices as a measure of turnout for that election year.<sup>16</sup> There appears to be a decline in average level of turnout for state primaries between the 1970s and 2000s.

We first use the presidential primary exit poll data to verify that primary election turnout is related to the polarization of the primary electorates. Figure 9 plots the average ideological gap in the primary electorates using the exit poll survey data from the 1992 to 2004 presidential primaries against the average levels of turnout for those primaries. This simple plot reveals a slight negative relationship between turnout and polarization of the primary electorate.

We also examine whether polarization in the primary electorate is related to the size of the primary electorate using the following specification:

$$R_{pit} = \alpha_i^R + \theta_1 R_{git} + \theta_2 T_{pit}^R + \gamma_t^R + \epsilon_{it} \quad (4)$$

$$D_{pit} = \alpha_i^D + \theta_1 D_{git} - \theta_2 T_{pit}^D + \gamma_t^D + \epsilon_{it} \quad (5)$$

$$(R_{pit} - D_{pit}) = \alpha_i + \theta_1 (R_{git} - D_{git}) + \theta_2 T_{pit} + \gamma_t + \epsilon_{it} \quad (6)$$

where  $D_{pit}$  is the average ideological position of respondents who voted in the Democratic primary in state  $i$  and presidential election year  $t$ ;  $R_{pit}$  is the average ideological position of respondents who voted in the Republican primaries;  $D_{git}$  is the average ideological position of respondents who voted Democrat in state  $i$  and presidential election year  $t$ ;  $T$  is a measure of primary election turnout,  $\alpha_i$  is a state fixed effect, and  $\gamma_t$  is a Congress specific fixed effect. We measure primary election turnout as the votes cast as a proportion of the voting age population.

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<sup>16</sup>The turnout data comes from the source mentioned in footnote 4.

In Table 4 we present our estimates of  $\hat{\theta}$ . The results provide some evidence that the turnout for primaries may be related to the ideological competition of the primary electorates. The ideological gap between the Democratic and Republican presidential electorates tend to be negatively correlated with overall turnout in the presidential primaries, but only statistically significant when both state and year fixed effects are included. However, when we examine each party separately we find that states where a party has high primary turnout also tends to have more moderate primary electorates on average.<sup>17</sup> Although the results are sensitive to whether certain fixed effects are included, this does provide some evidence that the ideological composition of the primary electorate across states may be related to the turnout levels in the states. As above, since we do not have primary election exit poll surveys for statewide office elections we assume that a similar pattern between turnout and electoral polarization exists in elections for statewide offices.

We examine whether congressmen’s roll-call voting behavior is related to primary election turnout using a specification similar to equation (3):

$$G_{it} = \alpha_i + \theta_1 C_{it} + \theta_2 T_{it} + \theta_3 C_{it} T_{it} + \gamma_t + \epsilon_{it} \quad (7)$$

The key difference between this equation and equation (3) is that we substitute a variable for turnout,  $T_{it}$ , for the indicator for polarized electorates.  $T_{it}$  is the average of the maximum turnout for a statewide office, excluding Senate, each year for the six years prior to year  $t$ .<sup>18</sup>

Table 5 presents our estimates of  $\hat{\theta}_1$ ,  $\hat{\theta}_2$  and  $\hat{\theta}_3$  in the above equation.  $\hat{\theta}_1$  and  $\hat{\theta}_3$  are statistically significant. Substantively, when primary contestation is one standard deviation more competitive, moving from one standard deviation above the average turnout to one standard deviation below the average turnout is associated with roughly a 20% increase above the average gap in DW-Nominate scores in split delegations. However, the describing the relationship between turnout, primary competition and senators’ roll call voting is complicated by the strong correlation between turnout and primary competition. Competitive

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<sup>17</sup>Low ideology scores indicate more liberal positions. Thus a positive coefficient on turnout indicates that higher turnout is related with more conservative ideological positions.

<sup>18</sup>We also include an interaction term. Although the coefficient on the interaction term is negative and significant as we might expect, the interpretation of this association is difficult to interpret. Since primary turnout and competition are highly correlated, simply including competition or turnout squared yields very similar results.

primaries also have relatively high turnout – e.g. there are no observations one standard deviation above the average primary contestation level and below the average turnout level. Moving from one standard deviation above average turnout and primary contestation to one standard deviation below average turnout and primary contestation is associated with less than a 2% increase above the average gap in DW-Nominate scores.

## 4. Roll Call Voting Positions and Electoral Outcomes

Despite the claims that competition in primary elections provide an electoral incentive for representatives to take more extreme policy positions, the results in the above sections suggest that there is little evidence for an observable relationship between primary competition and polarization in Congress. This raises questions regarding whether there is much of an electoral incentive for senators to take extreme roll call voting positions. Although there are some empirical findings that House members with relatively extreme roll call voting scores do better in primary elections (Brady et al., 2007), there are also findings that there are electoral benefits in the general elections from taking more moderate roll call voting positions (Ansolabehere et al., 2001; Canes-Wrone et al., 2001). Even though primary elections do provide some electoral incentive for senators to take extreme positions, whether or not a candidate will respond to these incentives depends also upon how their position will affect the general election outcomes.

In this section we first re-examine the evidence that partisan roll call voting positions are correlated with primary election outcomes. We then compare these results to the relationship between roll call voting positions and general election outcomes to examine the potential costs candidates face as a result of taking extreme positions. In the third subsection we examine the political careers of moderate senators to determine whether they are more likely to leave Congress by being defeated in primary election as the popular claims would suggest.

### *4.1 Roll Voting and Primary Election Outcomes*

A common claim is that the primary electorates support candidates who take more extreme policy positions. Brady, et al. (2007) provide some empirical evidence that the distances between U.S. House members' roll call voting positions and their general election

constituency preferences are negatively correlated with primary election outcomes. Their estimates rely on relatively weak measure of district partisanship. By focusing on the Senate our analysis takes advantage of periods when senators from the same party represent the same geographic constituency.

We assume that district preferences are relatively stable and use a fixed effect to capture the variation in the preferences of primary electorates across districts. Thus, we exploit the variation in roll call voting positions of members representing the same district. The multi-member districts for the U.S. Senate have the advantage of potentially having states represented by two incumbent senators from the same party with different policy position. Since the senators from the same states are essentially representing the same primary election constituencies, we can examine whether the variation in their roll call voting positions is correlated with their vote shares in the primary elections. Conventional wisdom is that senators with relatively partisan roll call voting positions will have relatively high vote shares in the primary elections.

Since many primary elections are uncontested, we first examine whether senators' roll call voting positions are related to whether they face primary challengers. For this analysis we use a simple linear probability model. The dependent variable is whether the senator is challenged in the primary. The main variable of interest is the candidates' roll call voting positions. For incumbents this is their position during the two years prior to the election. For open seats this is the two years just following their election. To be consistent with the above analyses we use DW-Nominate to measure roll call voting scores.<sup>19</sup> We also include the degree of primary contestation for all other statewide offices in the previous eight years by party as well as fixed effects for states and years.

The results presented in Table 6 suggest that there is little statistically significant evidence that senators' DW-Nominate scores are correlated with whether they are challenged in primary elections. For both incumbent Democrats and Republicans the coefficient on the DW-Nominate score is in the expected direction, i.e. the more extreme the candidate's position the less likely she will face a primary challenge, however the coefficients are not

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<sup>19</sup>For each party a higher DW-Nominate score indicates a more extreme roll call voting position.



statistically significant. For open seat races the coefficients on the DW-Nominate score is statistically insignificant and in the opposite of the expected direction, i.e., the more extreme candidates' positions are more likely to have faced primary challengers.

The second relationship of interest is whether the roll call voting position of senators who are challenged in a primary is related to the number of votes they receive in the primary election. Again the conventional wisdom is that senators with relatively more extreme policy positions should have relatively higher vote shares in the primary. We measure senators' vote shares as the proportion of votes cast for the top two candidates.<sup>20</sup> The main independent variable is the senator's roll call voting position. We include state fixed effects to account for differences in primary electorates across states.<sup>21</sup>

The results in Table 7 show that only the coefficient on DW-Nominate scores for Republican incumbents is in the expected direction. For incumbent Democrats, open seat Democrats and open seat Republicans, senators with relatively extreme roll call voting positions have relatively low vote shares in primary elections. However, none of the coefficients in Table 7 are statistically significant. Thus, we find little evidence that senators' roll call voting positions affect the electoral outcomes in the primary elections.

#### *4.2 Roll Voting and General Election Outcomes*

As the above discussion suggests, primary elections appear to provide little electoral motivation for senators to take an extreme roll call voting position. We now turn to the question of whether extreme roll call voting positions affect senators' electoral success in general elections.

In section 4.1 we used a simple fixed effects regression and assumed that district preferences were being captured by the fixed effect. We use a similar specification to test the relationship between senators' roll call voting positions and their support in general elections. The dependent variable is the senator's vote share of the two party vote. Again the

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<sup>20</sup>We also did the analysis using senators' vote shares as a proportion of all votes cast and the substantive interpretation of the results do not significantly change.

<sup>21</sup>To deal with the selection issue we considered using a Heckman selection model with contestation for all other statewide offices in the previous eight years but as the results in Table 6 illustrates, contestation in other statewide offices is only weakly related to contestation in Senate elections.

main independent variable of interest is the senator's roll call voting position, as measured by their DW-Nominate score. We also include state and year fixed effects. However, in some specifications we also include measures of the state normal vote using the average vote share of downballot offices for previous elections.

The results in Table 8 provide relatively strong evidence that incumbent senators with extreme roll call voting positions have lower vote shares in the general election than moderates. The increasing competitiveness of general election competition suggests that incumbent senators who wish to retain their position have a strong incentive to take moderate positions. The evidence is not as robust for open seat races.

#### *4.3 What Happens to Moderates in Congress?*

Finally, if taking moderate policy positions leave candidates vulnerable in primary elections, then we would expect a disproportionately large number of moderate congressmen to leave office because they lose a primary election. We define moderate senators as senators as Democrats with DW-Nominate scores of greater than -0.15 and Republicans with DW-Nominate scores of less than 0.10.

Table 9 lists the causes for why moderate senators left office. We focus on senators who served for more than one term between the 91st to the 110th Congress. Of the 25 moderate Democrats in the Senate during this period only 3 left office due to being defeated in a primary. Of the 25 moderate Republican only 2 left office because due to being defeated in a primary. Overall twice as many moderate senators left office because they lost in the general elections than because they lost in a primary. Of course we might suspect that these senators may be strategically retiring before losing in the elections. Also moderate senators who succeed in winning office may be different than other senators. Nonetheless, the reasons for leaving office at least suggest that primary competition does not have an obvious role in forcing moderate incumbent senators out of office.

## **5. Conclusions**

Today, the political parties in Congress are almost completely ideologically distinct: there are almost no Republican members of Congress considered to the left of the most conser-

vative Democratic member of Congress. That degree of differentiation reflects a fifty-year transformation of Congressional politics (e.g., McCarty, et al., 2006). Liberal Republicans and conservative Democrats were common in the 1950s; today they are nearly extinct. Why this division emerged has become one of the most vexing problems for American politics.

Primary elections have been viewed as one of the chief causes of the rising division between the parties in the U.S. Congress. A plausible argument can be made that they may contribute to increased extremism in legislative voting. Over the past three decades voters have sorted into increasingly ideological distinct camps, with Democratic primary voters becoming a more purely liberal group and Republican primary voters becoming a more purely conservative group. To get elected, it seems obvious that candidates must cater to their parties' core constituencies first and, then, run for the general election.

Compelling though that argument sounds, it lacks much empirical grounding. We find little or no evidence of a link between primary election competition and extremism or moderation on roll call votes in the U.S. Senate. In particular, variation in primary competition and/or turnout does not appear to affect the roll call voting of members of the Senate in any significant way.

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<b>Table 1: Primary Competition and Polarization Split-Party Senate Delegations, 1948 to 2004</b>						
	Contested			Close		
	(1)	(2)	(3)	(4)	(5)	(6)
	Non-Senate Statewide Offices					
Primary Competition	0.04 (0.04)	0.07 (0.04)	0.06 (0.07)	0.06 (0.06)	0.10 (0.05)	0.14* (0.07)
Observations	418					
	Senate Elections					
Primary Competition	0.03 (0.03)	0.05 (0.03)	-0.01 (0.03)	0.03 (0.04)	0.07 (0.04)	0.03 (0.03)
Observations	334			334		
	Senate Elections (Instrumental Variables)					
Primary Competition	0.07 (0.08)	0.11 (0.08)	– –	0.22 (0.26)	0.37 (0.31)	– –
Observations	279			279		

The above table provide the estimates of  $\hat{\theta}_1$  from equation (1). The first three columns measure primary competition using the proportion of contested primary elections. The second three columns use the proportion of closely contested primary elections. Columns (2) and (5) include year fixed effects. Columns (3) and (6) include year and state fixed effects.

<b>Table 2: Primary Competition and Polarization Replacements, 1948 to 2004</b>					
	Contested		Close		Obs
	(1)	(2)	(3)	(4)	
Non-Senate Statewide Office Primary Competition					
Democrats	0.07 (0.07)	0.09 (0.08)	0.07 (0.07)	0.05 (0.09)	137
Republicans	0.08 (0.07)	0.01 (0.07)	0.07 (0.07)	0.01 (0.07)	159
Senate Primary Competition					
Democrats	0.03 (0.03)	0.04 (0.04)	-0.01 (0.02)	0.01 (0.03)	145
Republicans	0.05 (0.04)	0.05 (0.04)	0.03 (0.03)	0.03 (0.03)	156
Senate Primary Competition (Instrumental Variables)					
Democrats	-0.16 (0.20)	0.12 (0.18)	0.08 (0.10)	0.05 (0.07)	124
Republicans	-0.99 (0.12)	0.60 (1.98)	-1.82 (5.82)	0.21 (0.48)	144

Each entry in the table is an estimate of  $\hat{\theta}$  from equation (2). Results for Democratic and Republican senators are provided separately. Columns (1) and (3) include state fixed effects. Columns (2) and (4) include year and state fixed effects.

<b>Table 3: Polarized Electorate and Congressional Polarization Split-Party Senate Delegations, 1988 to 2004</b>					
		Contested		Close Primary	
		Statewide Office			
Polarized State	0.02 (0.04)	-0.13 (0.07)		-0.12 (0.06)	
Primary Competition		0.09 (0.12)	-0.43* (0.18)	0.02 (0.17)	-0.18 (0.17)
Polarized State * Primary Competition		0.38* (0.16)	0.28 (0.23)	0.62* (0.22)	0.08 (0.23)
Observations	115				
		Senate			
Polarized State	0.04 (0.05)	-0.02 (0.07)		0.04 (0.06)	
Primary Competition		0.10 (0.09)	-0.13 (0.09)	0.12 (0.12)	0.05 (0.11)
Polarized State * Primary Competition		0.11 (0.11)	0.12 (0.11)	0.01 (0.15)	0.04 (0.13)
Observations	82				

Table 3 presents estimates of  $\hat{\theta}_1$ ,  $\hat{\theta}_2$ , and  $\hat{\theta}_3$  from equation (3). Columns (2) and (4) include year fixed effects. Columns (3) and (5) include both year and state fixed effects. Standard errors are clustered by pairs of Senators.



<b>Table 4: Turnout and Polarization in the Presidential Primary Electorate 1992 to 2004</b>					
	(1)	(2)	(3)	(4)	Obs
Ideological Gap in Primary Electorate					
Primary Election Turnout	-0.32 (0.29)	-0.06 (0.20)	-1.51 (0.83)	-0.86* (0.38)	40
Ideological Gap in General Electorate	0.53* (0.22)	0.39* (0.15)	0.27 (0.40)	-0.02 (0.18)	
Ideological Position of Democrats					
Primary Election Turnout	0.71* (0.28)	0.24 (0.26)	2.17* (0.49)	1.42* (0.40)	64
Ideological Position in General Election	1.04* (0.12)	0.87* (0.11)	0.41 (0.21)	0.13 (0.14)	
Ideological Position of Republicans					
Primary Election Turnout	-0.86* (0.21)	-0.94* (0.20)	-0.61 (0.31)	-0.69* (0.24)	74
Ideological Position in General Election	0.50* (0.11)	0.51* (0.11)	-0.06 (0.12)	-0.30* (0.11)	

The top section provides estimates of  $\hat{\theta}_1$  and  $\hat{\theta}_2$  from equation (6). The middle section provides estimates of  $\hat{\theta}_1$  and  $\hat{\theta}_2$  from equation (5). The bottom section provides the estimates from equation (4). Column (2) includes year fixed effects. Column (3) includes state fixed effects. Column (4) includes state and year fixed effects.

Table 5: Primary Turnout and Congressional Polarization Split-Party Senate Delegations, 1948 to 2004						
	Turnout		Contested		Close Primary	
	Statewide Office Primary Competition					
Primary Turnout	0.22 (0.19)	-0.19 (0.24)	0.75 (0.39)	0.47 (0.43)	0.61 (0.34)	-0.07 (0.38)
Contested Primary			0.56* (0.14)	0.45* (0.14)	0.77* (0.19)	0.45* (0.18)
Contested Primary*Turnout			-2.63* (0.77)	-2.19* (0.82)	-3.73* (1.05)	-1.70 (1.05)
One Convention	0.11 (0.23)	0.06 (0.15)	0.07 (0.21)	0.06 (0.16)	0.09 (0.21)	0.08 (0.16)
Two Conventions	0.04 (0.07)	0.15 (0.08)	0.07 (0.07)	0.17 (0.12)	0.07 (0.06)	0.18 (0.11)
Observations	451		403			
	Senate Primary Competition					
Primary Turnout			0.05 (0.42)	-0.12 (0.37)	0.35 (0.30)	0.04 (0.32)
Contested Primary			0.03 (0.10)	-0.01 (0.08)	0.15 (0.12)	0.09 (0.08)
Contested Primary*Turnout			0.18 (0.59)	0.05 (0.48)	-0.46 (0.67)	0.43 (0.48)
One Convention			0.13 (0.23)	0.09 (0.15)	-0.11 (0.23)	0.08 (0.15)
Two Conventions			0.06 (0.09)	0.16 (0.10)	0.06 (0.08)	- -
Observations	301					

Table 4 presents estimates of  $\hat{\theta}_1$ ,  $\hat{\theta}_2$ , and  $\hat{\theta}_3$  from equation (7). Columns (1), (3) and (5) include year fixed-effects. Columns (2), (4) and (6) include year and state fixed-effects.

**Table 6**  
**A Simple Linear Probability Model of**  
**Primary Contestation and Roll Call Voting Positions**  
**1948 to 2004**

	Incumbents				Open Seat			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Democrats							
DW-Nominate Score	-0.31 (0.28)	-0.01 (0.31)	-0.29 (0.34)	-0.11 (0.46)	0.16 (0.25)	0.57 (0.33)	0.35 (0.53)	0.48 (0.98)
Contested Primary	0.42* (0.12)	-0.26 (0.14)	-0.33 (0.23)	-0.39 (0.28)	0.75* (0.13)	0.23 (0.35)	0.85 (0.45)	0.57 (1.33)
Observations	230				116			
	Republicans							
DW-Nominate Score	-0.43* (0.20)	-0.57* (0.28)	-0.45 (0.39)	-0.35 (0.41)	-0.18 (0.23)	0.41 (0.56)	0.41 (0.46)	0.27 (0.76)
Contested Primary	0.53* (0.12)	0.26 (0.22)	0.46* (0.18)	0.43* (0.20)	0.44* (0.14)	0.13 (0.23)	-0.04 (0.35)	0.53 (0.43)
Observations	235				124			

Columns (1) and (5) include year fixed effects. Columns (2) and (6) include state and year fixed effects. Columns (3) and (7) include state x decade fixed effects. Columns (4) and (8) include state x year fixed effects. Standard errors are clustered by state.

Table 7: Primary Elections and Roll Call Voting in the Senate, 1948 to 2004						
	Incumbents			Open Seat		
	(1)	(2)	(3)	(4)	(5)	(6)
	Democrats					
DW-Nominate Score	-0.04 (0.09)	-0.12 (0.10)	-0.13 (0.09)	-0.06 (0.20)	-0.11 (0.21)	-0.38 (0.28)
Observations	166			103		
	Republicans					
DW-Nominate Score	0.21 (0.13)	0.15 (0.10)	0.22 (0.18)	-0.04 (0.13)	-0.05 (0.15)	-0.16 (0.22)
Observations	140			126		

Columns (1) and (4) include year and state fixed effects. Columns (2) and (5) include state x decade fixed effects. Columns (3) and (6) include state x year fixed effects. The standard errors are clustered by state.

**Table 8:**  
**General Elections and Roll Call Voting**  
**in the Senate, 1948 to 2004**

	Incumbents				Open Seat			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Democrats							
DW-Nominate Score	-0.12* (0.03)	-0.11* (0.03)	-0.15* (0.04)	-0.11* (0.04)	-0.04 (0.05)	-0.08 (0.05)	-0.15* (0.07)	-0.18* (0.07)
Normal Vote		0.72* (0.11)		0.67* (0.11)		0.53* (0.26)		0.56* (0.16)
Net Incumbency		-0.02 (0.01)		-0.02 (0.02)		-0.02 (0.02)		-0.03 (0.02)
Observations	338	300	338	300	154	146	154	146
	Republicans							
DW-Nominate Score	-0.14* (0.03)	-0.11* (0.03)	-0.11* (0.03)	-0.10* (0.03)	-0.03 (0.03)	-0.07* (0.03)	-0.01 (0.04)	-0.05 (0.04)
Normal Vote		-0.78* (0.08)		-0.59* (0.08)		-0.57* (0.11)		-0.54* (0.21)
Net Incumbency		0.06* (0.01)		0.06* (0.01)		0.00 (0.01)		-0.00 (0.02)
Observations	333	304	333	304	171	158	171	158

The numbers not in parentheses are the percentage of all cases in each category within each time period. In parentheses are the number of cases in each category.

**Table 9:  
Reasons Why Senate Moderates and “Misfits” Left the Senate**

Democrats			Republicans		
State	Senator	Reason	State	Senator	Reason
AL	Sparkman	Retired	CT	Weicker	Lost general
AL	Allen	Died in office	IL	Percy	Lost general
AL	Shelby	Switched Parties	KS	Pearson	Retired
AL	Heflin	Retired	KY	Cooper	Retired
AR	McClellan	Died in office	MA	Brooke	Lost general
FL	Holland	Retired	MD	Mathias	Retired
GA	Russell	Died in office	ME	W. Cohen	Retired
GA	H. Talmadge	Lost general	ME	Snowe	Still serving
GA	Numm	Retired	ME	Collins	Still serving
GA	Z. Miller	Retired	MN	Durenberger	Retired
LA	Ellender	Lost primary	NJ	Case	Lost primary
LA	R. Long	Retired	NY	Goodell	Lost general
LA	Breaux	Retired	NY	Javits	Lost primary
MS	Eastland	Retired	OR	Hatfield	Retired
MS	Stennis	Retired	OR	Packwood	Retired
NC	Ervin	Retired	PA	Schweiker	Retired
NC	Jordan	Lost primary	PA	Heinz	Died in office
NE	Zorinsky	Died in office	PA	Specter	Still Serving
NE	Nelson	Still serving	RI	J. Chafee	Died
OK	Boren	Retired	RI	L. Chafee	Lost general
TX	Krueger	Lost general	VT	Aiken	Retired
VA	Byrd Jr.	Switched parties	VT	Stafford	Retired
FL	Stone	Lost primary	VT	Jeffords	Switched parties
NC	Morgan	Lost general	ME	Smith	Lost general
TX	Bentsen	Resigned	ND	Andrews	Lost general

Figure 1. Congressional Polarization using DW-Nominate Scores

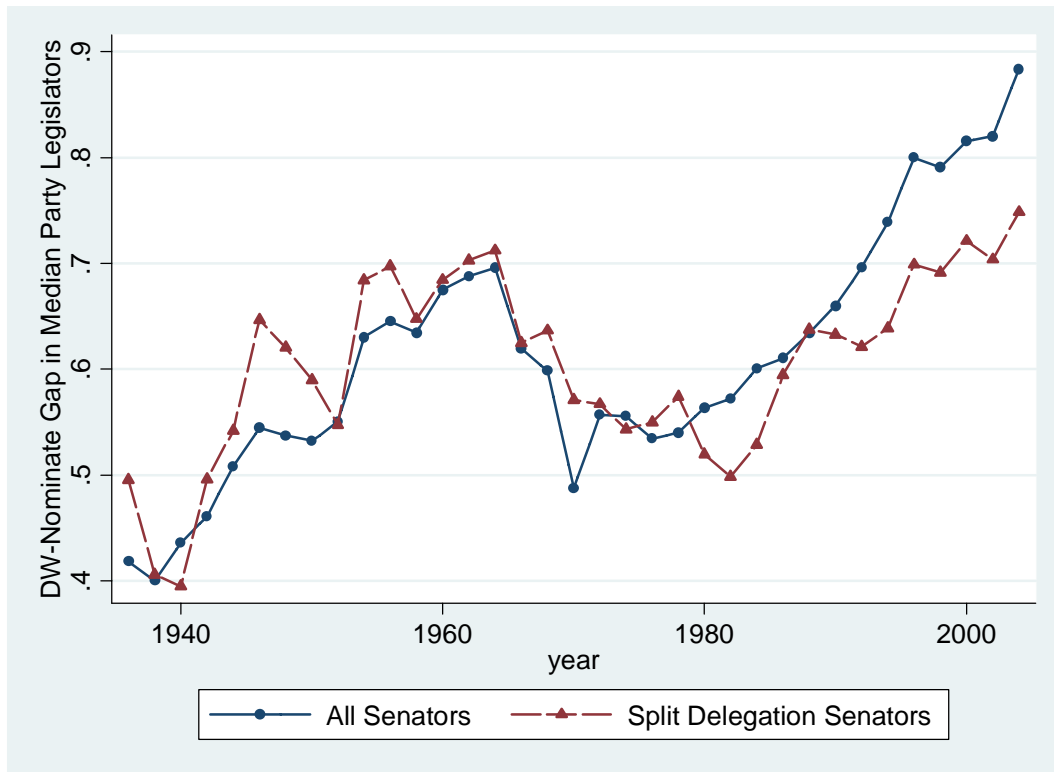


Figure 2

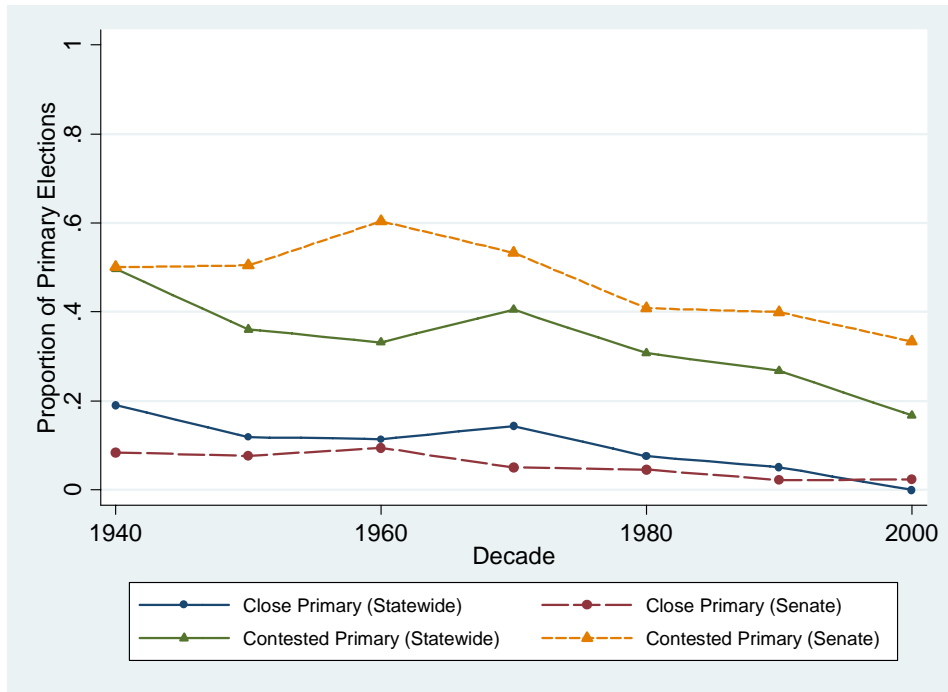




Figure 3

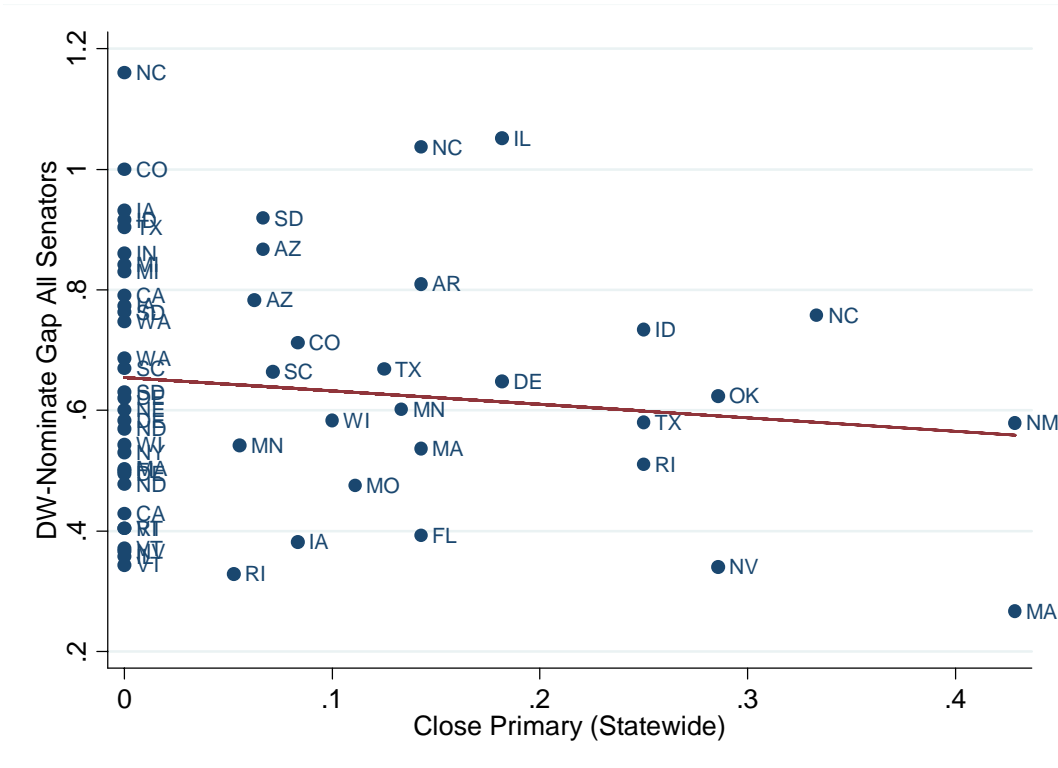
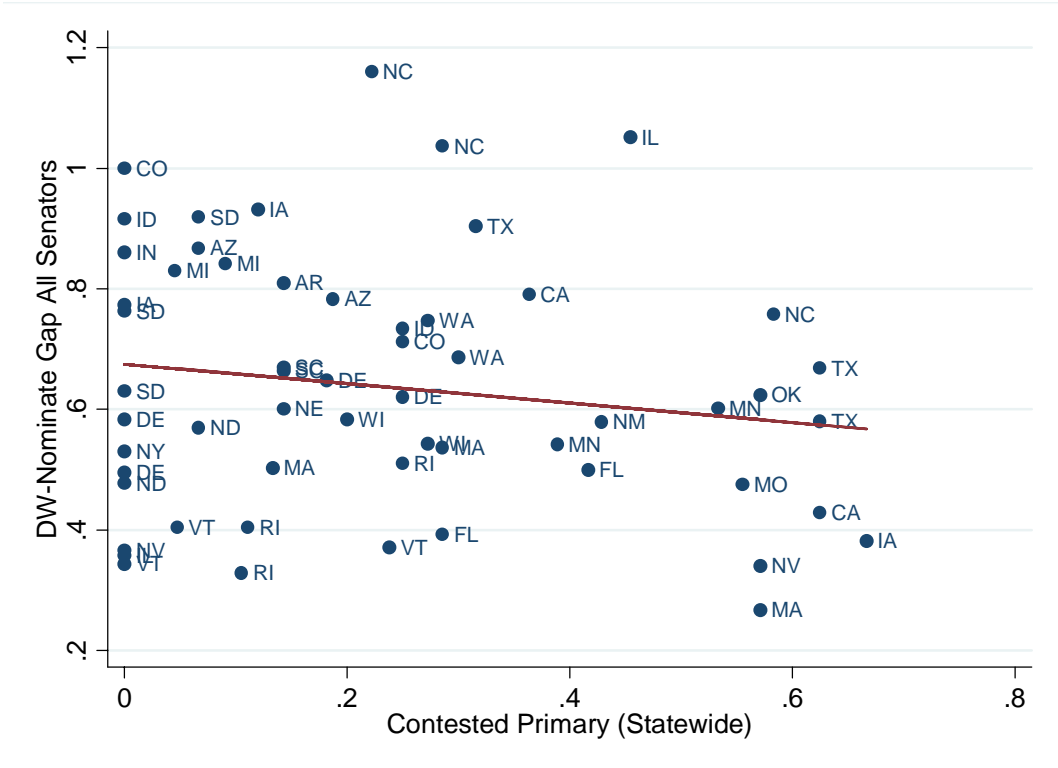


Figure 4.

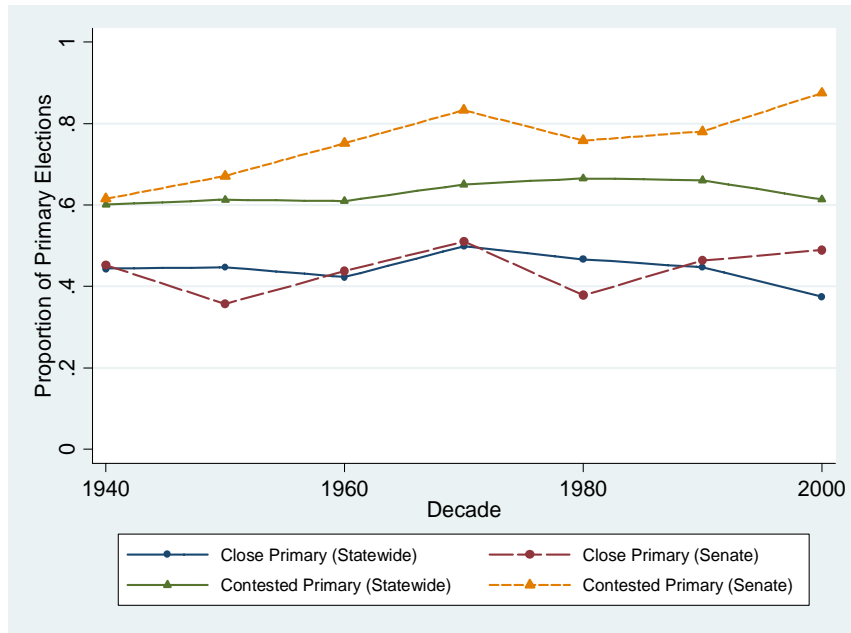


Figure 5

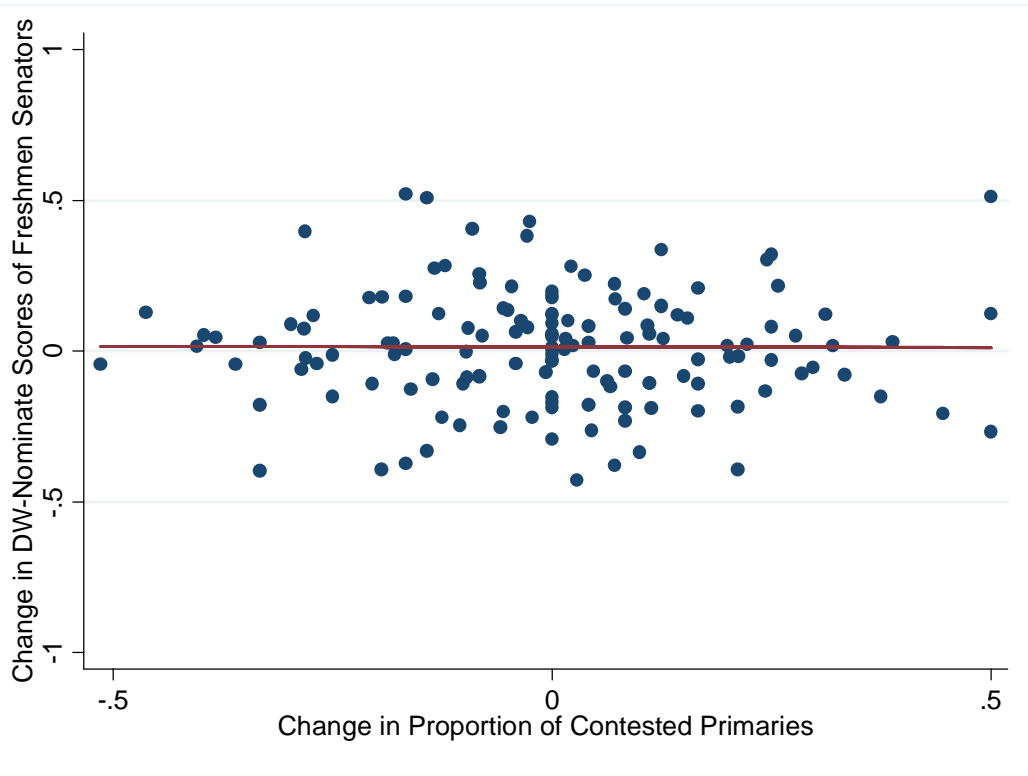


Figure 6

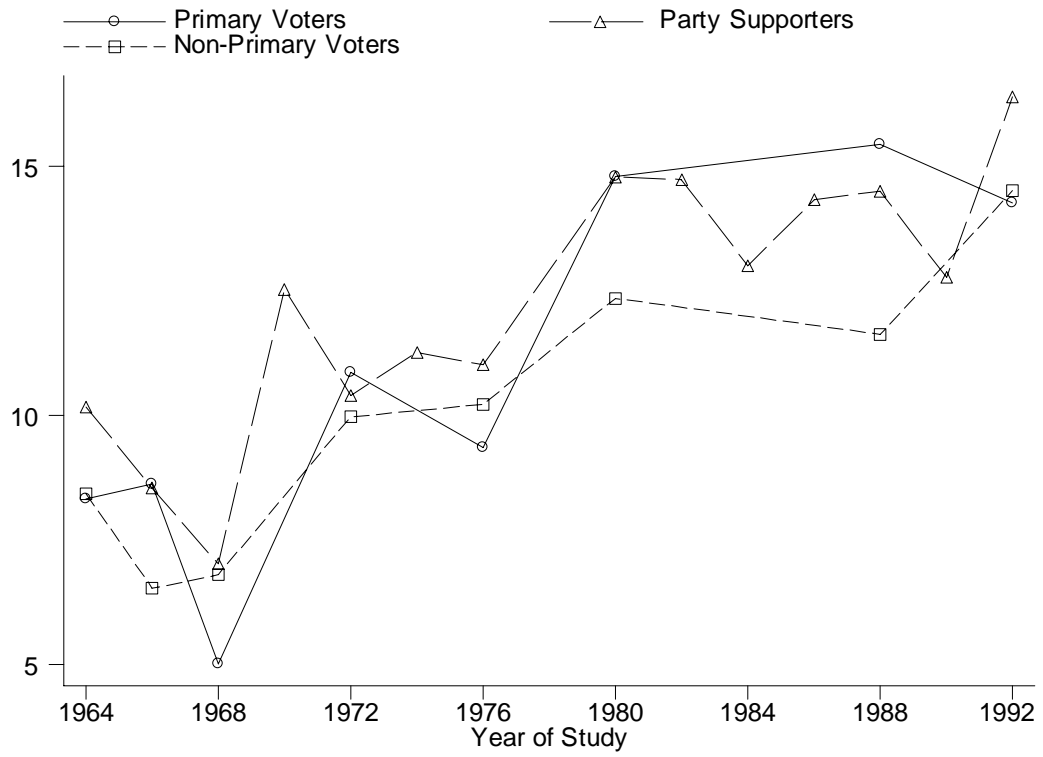


Figure 7.

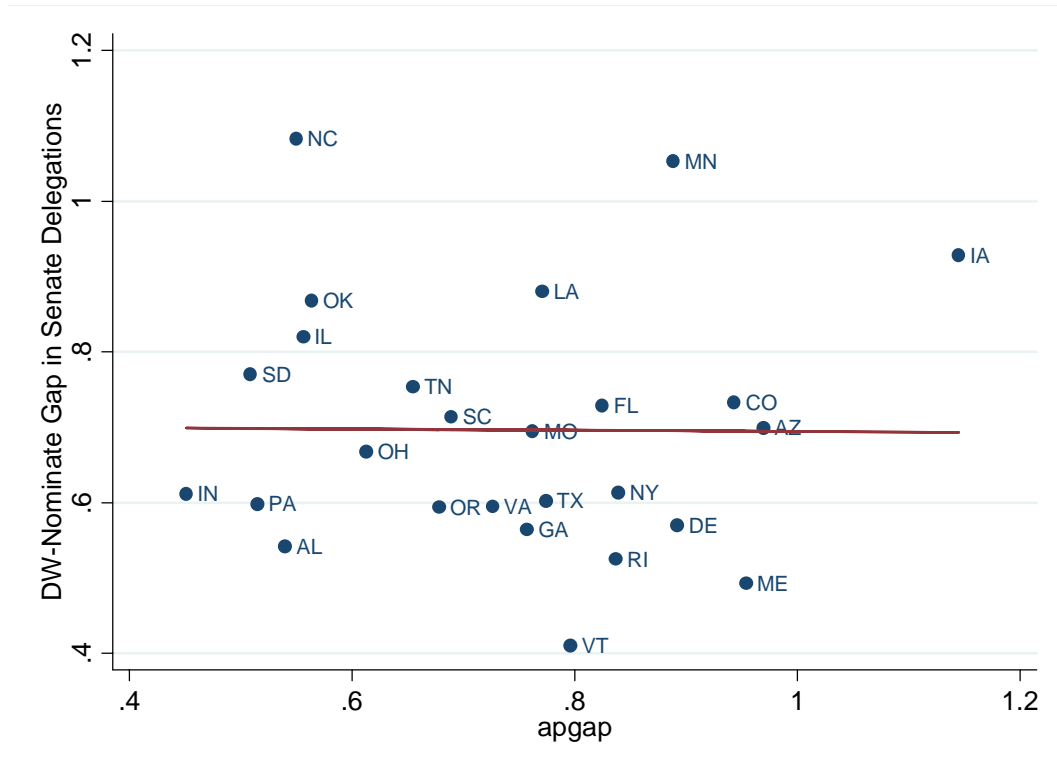


Figure 8

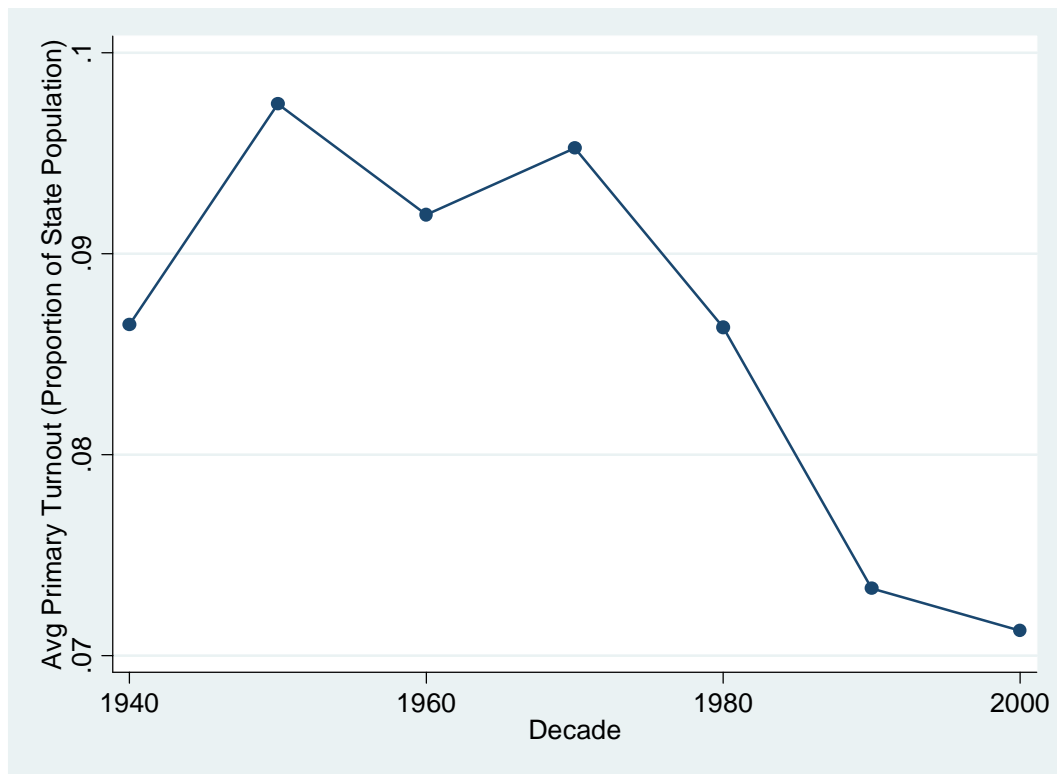


Figure 9

