Explaining Variation in the Competitiveness of U.S. Senate Elections, 1922-2004

Stanley L. Winer[a], Lawrence W. Kenny[b*] and Bernard Grofman[c]

February 27, 2014

ABSTRACT

We develop and test predictions about the factors determining the competitiveness of elections to the U.S. Senate. To do so, we deliberately abstract away from candidate-specific conditions that have often been used to study political competitiveness in order to focus on basic structural features of the electoral landscape. In our framework, party-specific constraints on the ideological positioning of local candidates, linked to the national party organization and its contributors, interact with the heterogeneity of state electorates to determine the number of highly competitive Senate contests. Three hypotheses emerge from this model: *(1) the greater the diversity of a party's national legislative delegation, the more highly competitive Senate elections we will observe; (2) states in which the ideological heterogeneity of the electorate is relatively high will exhibit a greater number of highly competitive elections; and (3) highly competitive Senate contests will be more common in states with closed primaries than in states with open primarie*s. We provide strong evidence in support of the first two hypotheses and some evidence in support of the third.

[a] Carleton University, School of Public Policy and Department. of Economics, Ottawa, Canada K1S5B6
[b] University of Florida, Dept. of Economics, Gainesville, FL 32611-7140
[c] University of California, Irvine, 5215 Social Sciences Plaza B. Irvine, CA 92697
*Corresponding author. E-mail address: kenny@ufl.edu.

Key words: electoral competition; political competitiveness; U.S. Senate elections; ideological heterogeneity; national party constraints; primary elections; spline regression; asymmetric breakpoint.
JEL categories: D72

1.   Introduction

Understanding the nature of political competition is a central issue in political economy and in democratic theory.[1] In this paper, we develop and empirically test a new model that explains why the competitiveness of U.S. Senate elections varies across space and time. To do so, we deliberately abstract away from candidate-specific factors that have often been used to study the determinants of political competitiveness in order to consider more general features of the electoral landscape.[2] In the framework we present, party-specific constraints on the ideological positioning of local candidates imposed by the national party organization, its' contributors and activists interact with the heterogeneity of state electorates to determine the number of highly competitive Senate races.[3]

In the standard Downsian (1957) model of two-party competition under plurality rule, one that has often been used to analyze electoral equilibria, when voters choose platforms nearest to their own ideal points and only the local struggle for votes drives party platforms, anything other than close elections is an anomaly. Although parties may have different voter bases in this framework, they both draw roughly equal shares of the vote.[4] Such an outcome is not, however, characteristic of actual elections to the U.S. Senate. Despite a lack of variation in the basic rules governing Senate elections since direct elections were mandated under the 17th Amendment in 1913[5], there has been considerable variation in the competitiveness of Senate elections, with a substantial proportion of them far from being close, even for open-seat contests.

Table 1 shows patterns of competitiveness in U.S. Senate races from 1922 to 2004, the period we study. The measure of competition in a state's Senate races shown is the average Republican share of the votes received by the two major parties, averaged over a 12 year period.[6] This table shows that a substantial portion of Senate elections were highly competitive in the

period under investigation. In the open (no-incumbent) election subsample of averaged data, the winner received between 0.50 and 0.55 of the two-party vote in about 40% of the state-time cells, and between 0.55 and 0.60 of the vote in 31% of the cells. But 30% of the open-seat observations in the table involve a winner who garnered at least 0.60 of the votes. And in 8% of the state-time cells the winner received at least 0.80 of the major party vote. Moreover, there are large swings in the degree of competitiveness over time.[7]

[Table 1 here]

If we leave aside work that seeks to uncover the conditions affecting competition in particular, individual contests, there is presently no general theory of how and why variation in the competitiveness of Senate elections illustrated in Table 1 will arise within a mature democracy operating under more or less fixed electoral rules.[8] As a prelude to the construction of of a theoretical framework that can address this problem, it proves useful to call attention to two well-known stylized empirical facts characterizing the voting records of members of Congress that any realistic model of political competitiveness should be able to replicate. First, from Poole and Rosenthal's (1984, 1997) seminal work using roll call data, we know that Republican senators have a more conservative record than Democrats from the *same* state, while senators of the same party from the same state generally vote remarkably alike. Second, despite general party polarization, the same data show that there remains considerable intra-party variation in the ideology of each party's Senators. The stylized facts revealed by the DW-Nominate data suggest that whatever model one develops to explain the variation in the competitiveness of Senate elections illustrated in Table 1, it should be one in which convergence of candidate positions across parties often does not occur, and one in which considerable intra-party heterogeneity remains in an electoral equilibrium. [9]

To begin the formulation of a model of competitiveness that is consistent with the stylized facts we have presented, we posit that there exist external, party-specific constraints on a local candidate's choice of policy platform, the strength of which may vary over time and space as well as by party. Such constraints may stem from the need to attract campaign workers from local party activists and from the need for funding from both local and national sources, which may not be forthcoming to candidates who stray too far from positions that groups associated with the party regard as acceptable.[10] Also, widely shared voter perceptions of what it means to be a Republican or to be a Democrat may make platform positions that are too far away from national party images not credible or too risky for voters (Wuffle et al. 1989). As Snyder and Ting (2002: 79) put it: "Party labels may be valuable to (candidates and) voters because they provide low-cost information about the preferences of groups of candidates across multiple offices." As a final reason for constraints on platform selection, we note that selection may be constrained by the threat of a primary challenge by someone in a candidate's own party who holds a more "purist" position.[11]

The strength of such constraints can be viewed as varying along a continuum between two polar situations. At one end, in what we shall refer to as the *National Party* framework, constraints on local candidates are very tight. Here, all candidates of a given party must adopt the same platform regardless of the state-specific character of the electorate, and most contests are uncompetitive since the median voter in any state will be closer to one party than to the other. This type of model has been explored by Austen-Smith (1984, 1987) and Callander (2005).[12]

At the other end of this continuum is the *Local Platform* framework, in which national constraints on local candidates are very loose. In this polar case, platforms of both party's candidates can be optimally situated relative to the distribution of the local electorate, and all

elections are highly competitive. As we have pointed out, such a situation would be predicted by a pure Downsian (1957) model applied at the local level in isolation from national forces or any role for party activists and contributors.

Neither of these polar cases is consistent with the empirically observed variation in competitiveness illustrated in Table 1, or with the variation in the ideological heterogeneity of elected representatives from each party that we observe in the DW-Nominate data.[13] In the National Party framework, elections are generally not competitive enough to match the empirical data, and there is too little heterogeneity in platforms espoused by members of the same party, while the Local Platform framework errs in the other direction.

The model that we present and test is a mixture of the two polar cases described above. We shall refer to this framework, which combines local and national conditions embodied by the two polar cases, as the *Mixed Influence Model*. As we will show, it can be used to explain variation in competitiveness like that illustrated in Table 1 while at the same time being consistent with the DW-Nominate-based stylized facts about inter-party polarization and intra-party heterogeneity.

In this intermediate framework, some contests are dominated by one of the two parties and others are highly competitive. Of course there is no surprise in a prediction that Senate races are competitive in some states while other states are Democratic bastions or Republican strongholds.[14] But we can go substantially further, both theoretically and empirically. The Mixed Influence Model that we develop in a more formal manner in the next two sections leads to three non-obvious, testable hypotheses that identify and embody the effects of key factors lying behind observed variation in the competitiveness of Senate elections. First, it is straightforward to see that the looser the constraints imposed by a national party, the better able

are the party's local candidates to position themselves effectively vis-à-vis the local electorate, thereby leading to more states with competitive Senate elections. Less obvious is the idea that the strength of such constraints may be proxied by the ideological diversity among the elected members of a given party on the argument, considered further in section 3, that more a more diverse legislative caucus is less willing or able to collectively place demands on local candidates. This chain of reasoning leads to a first hypothesis: the greater the diversity of a party's national legislative delegation, the more competitive elections we will observe.

Secondly, the Mixed Influence Model generates the novel prediction that states in which the ideological heterogeneity of the electorate is relatively high will exhibit a greater number of highly competitive Senate elections. As will become clear in what follows, the more heterogeneous are voters within a state, the more likely it is that local candidates there can find platforms to appeal to the state's median voter despite national constraints on local platform positioning of given strength. (In testing this hypothesis, we will use the variance in DW-Nominate scores of a state's congressional delegation as a proxy for ideological diversity of electors within the state). The intuition for this result is that by inducing candidates to move away from the median in opposite directions, increasing ideological diversity of a local electorate leads some external constraints on the positioning of local candidates to become non-binding.

Putting these two results together yields an additional proposition concerning candidate positioning that is also original in the neo-Downsian literature. These two hypotheses, if substantiated, together indicate that the positioning of each party's local candidate depends not only upon the median characteristics of the district within which the competition is taking place, but also upon the *heterogeneity* or diversity of *both* the district's electorate and that of the party's national caucus.

A third testable hypothesis stems from a consideration of the effects on competition of an important institutional feature of U.S. elections, namely the open versus closed nature of primary rules used in selecting party candidates. The necessity of pleasing only own-party members in a closed primary has been hypothesized to pull the platforms of candidates of opposite parties farther apart than they are in open primaries. [15] If so, then on the same reasoning lying behind our second hypothesis, the resulting polarization will relax constraints on candidate positioning in some local elections, and will therefore have an effect analogous to that of an increase in the heterogeneity of the local electorate. Thus we have a third hypothesis: highly competitive Senate contests will be more common in states with closed primaries than in states with open primaries. The remainder of the paper proceeds as follows. In the next section we begin the presentation of our Mixed Influence Model by adding constraints on local positioning to a well-known version of the Local Platform framework. The model is developed further in section 3 where the three predictions of our model that identify key factors behind variation in competitiveness are derived at some length. In sections 4 and 5 we show how the estimation of a three-segment spline in an ideological dimension allows us to test these predictions, and we provide strong evidence in support of the first two hypotheses and some evidence in support of the third. A brief discussion of some of the robustness checks reported in detail in the online Methodological Appendix is found in Section 6. A concluding discussion summarizes findings and offers suggestions for follow-up research.

2. From a Local Platform Model to the Mixed Influence framework

For both empirical and theoretical reasons, we accept at the outset of the development of our Mixed Influence Model that convergence to the constituency median should not be expected

in a two-party contest.[16] In the U.S., we expect that, *ceteris paribus*, Democrats should

campaign to the left of the constituency median and Republicans to the right.

It is important to note that platform divergence is not *by itself* enough to understand the

facts concerning variation in political competitiveness illustrated in Table 1, as we suggested

earlier. In virtually all models with divergent equilibria, the two parties' platforms are taken to

be an equal distance from the median voter so that both parties' chances of success are always

more or less equal. Nonetheless, as we shall see, it is convenient to begin development of our

own framework with one of the standard models predicting local platform divergence, due to

Palfrey (1984). In this nice generalization of Hotelling's model of candidate positioning, the two

local party platforms are, for simplifying distributional assumptions, shown to fall at equal

distances from the median voter, one on either side, with both parties' chances of success being

more or less equal. The reason for divergence away from the median is that the two parties are

concerned with the possibility that a challenger may enter on one side or the other of the

median.[17]

To keep matters as straightforward as possible in what follows, we assume that

competition between candidates in any election takes place in one ideological dimension,

ordered uniformly from 0 (most liberal) to 100 (most conservative).[18] In this dimension, the

median ideal point in each state is assumed to be unique and different from the national median.

We also assume for simplicity, and following the formal modeling in Palfrey's paper, that the

distribution of voter ideal points is uniform, though this is not required in our empirical

implementation of the model. This results in party platforms being located at the "one quarter"

and "three-quarter" positions from the left in equilibrium.

In the absence of party-specific constraints on local positioning, this setup framework

produces the conclusion we attributed to the Local Platform framework, that all elections will be highly competitive. Such a result is illustrated by the first ideology line or element in Figure 1, which is drawn for some state i.

[Figure 1 here]

In Figure 1, the distribution of voter ideal points ordered from most liberal to most conservative ranges from $(m_i - 2d_i)$ to $(m_i + 2d_i)$, where m_i is the ideological ideal point of the median voter, and d_i measures the dispersion of voter ideal points in this state. Then, following Palfrey's solution, if the Democratic candidate represents the state's more liberal voters, he or she will select the unconstrained platform that is one quarter up the distribution at $(m_i - d_i)$, and the unconstrained Republican candidate will select the position that is three quarters up the state's distribution, at $(m_i + d_i)$. For example, if m_i equals 30 and d_i equals 10, as shown beneath the first element or row of the figure, the distribution of ideological ideal points ranges from 10 to 50, the Democrat runs on a platform of $\mathbf{D} = 20$, and the Republican candidate selects a platform $\mathbf{R} = 40$. In such an equilibrium, the election is fully competitive, with each candidate having a 0.5 probability of winning.

If the median voter's preferred ideology then shifts to the right by $\Delta = 5$ say (i.e., m_i rises by Δ) with no change in dispersion, the interval $[(m_i - 2d_i), (m_i + 2d_i)]$ shifts to the right by 5 and each candidate's platform rises by the same amount, as indicated in the second row of the figure. So Senate candidates in the now more conservative state both run on more conservative platforms, and again the election is highly competitive.

Suppose, now, that we introduce party-specific constraints on the ability of local candidates to choose policy platforms. This key assumption when added to the Palfrey model produces an example of our Mixed Influence framework. In the Palfrey model all states are

highly competitive, but that will not be true when constraints on local positioning exist. In fact, in the example we have been using, we can say in which states Senate contests will not be competitive. The answer is illustrated in Figure 1 by the third element, which is drawn on the assumption that support from the national Republican party or party activists is reduced if the Republican candidate's position is, say, less than 30.

If the dispersion parameter d equals 10 as in the first element of Figure 1, then the median ideology in the marginal state at which this constraint just begins to bind in equilibrium (m_i*) is where $m_i^* + 10 = 30$, implying that $m_i^* = 20$. Thus in more liberal states, where $m_i < 20$, the Republican candidate will be disadvantaged because she cannot adopt a platform that is sufficiently liberal to be fully competitive.[19] In more conservative states, on the other hand, Republican candidates can select their fully competitive platform with little interference from the national party or with little constraint on electability caused by deviation from a national party image. Similarly, Democratic candidates can expect to have few chances for success in the most conservative states.

In this Mixed Influence Model, which combines local and national influences on candidate positioning, the more conservative the median voter in the state, the more conservative we expect the state's Senator to be. But unlike what is true for the Local Platform framework with party divergence that we have constructed using Palfrey' model as a base, not every election is expected to be competitive, and some states will become one party strongholds.

As we pointed out earlier, the prediction that, *ceteris paribus*, very liberal states will probably elect Democrats while very conservative states will probably elect Republicans, and that moderate states will exhibit highly competitive elections is a well-established proposition in the *empirical* literature on party competition at the state level. It is important to note, however,

that such a proposition does not follow from the standard Downsian (or Hotelling) framework. Here we derive this empirically accurate prediction directly by mixing the effects of local electoral conditions - concerning the position of the median voter and the dispersion of the local electorate - with the effects of constraints of national origin.

In the next section we provide a fuller discussion of how national constraints and the heterogeneity of local electorates interact to determine competitiveness, and we use the resulting framework to more carefully derive the three key hypotheses that we will test in the rest of the paper. We will also see that interaction of constraints and the heterogeneity of local electorates explains the intra-party ideological heterogeneity of successful Senate candidates revealed by the DW-Nominate data.

3.   Three key factors that affect competitiveness in the Mixed Influence Model

The Mixed Influence Model leads to three key hypotheses and in so doing identifies three factors underlying competitiveness in addition to the location of the local median; the ideological heterogeneity of local electorates; national constraints on local candidates, to be represented for reasons and in the manner described below; and the open versus closed nature of primary elections. In this section we derive the three hypotheses in which these factors play a role at greater length. This discussion sets the stage for empirical testing in the remainder of the paper

3.1   Effects of changes in the heterogeneity of voter ideology at the state level

It is convenient to begin by considering what happens in a Mixed Influence Model if the ideological heterogeneity of voters in a constituency increases, with the external constraints on local candidates held fixed.[20] To do so, we may start with the situation for a given marginal state (where the national or external constraint just bites) first described in the third row of Figure 1 and repeated in Figure 2 below, where the median in the marginal state is m* and the dispersion

parameter is d. In this state, the national party constraint on the Republican candidate, represented by the vertical dotted line at R* just binds at the equilibrium, and the election is (still) fully competitive.

[Figure 2 here]

Suppose now that the dispersion of voter ideal points generally increases from d to d', as shown in the second element of Figure 2.[21] The Republican candidate in the marginal state we are considering then becomes unconstrained, as indicated by the fact that the optimal, fully competitive Republican position R' is now to the right of the dotted line. As indicated by the third element in Figure 2, it is clear that the same national constraint will just bite (at the same value of R*) only when the median in the new marginal state is equal to m*' < m*. Thus, compared to the situation before d increased, there will be an additional set of states, those with medians in the interval [m* – m*'], where Republican candidates may take fully competitive positions unconstrained by national party organization, party images or external party contributors.

What is happening here is that as the ideological dispersion or heterogeneity of local electorates increases, *both* candidates have incentives to move outwards towards their more hardline supporters. Some local Republican candidates then find that they will no longer face sanctions for being too liberal if they adopt a fully competitive (1/4, 3/4 type) platform.[22]

A numerical example helps to make this point even clearer. Let the dispersion parameter *d* be equal to 10 initially, and assume that the national party or external Republican donors begin to constrain a local Republican candidate's platform choice when the ideological constraint parameter *k* equals 30. Thus, the median in the marginal state is defined by *m* + d = k,* so that *m* + 10 = 30* and *m* = 20,* as shown in Figure 2. Hence Republican candidates in races in

which the median voter has an ideology rating of less than 20 will be disadvantaged. Then suppose that the dispersion parameter *d* generally rises to 12, with *k given.* In that case, the median ideology where the constraint bites is now 18 instead of 20. In this example, Senate races in which the median ideology falls between 18 and 20, which were not competitive before - because the Democrat was favored in these contests – now become fully competitive in the more heterogeneous situation.

Summarizing the above analysis as a hypothesis, we can say that the Mixed Influence Model predicts that states in which the ideological heterogeneity of the electorate is relatively high will exhibit a greater number of highly competitive elections.

3.2   The effects on competitiveness of changes in national, party-specific constraints

In addition to varying the heterogeneity of local electorates with given constraints on local positioning, we can also think about what happens when the tightness of these constraints are changed. In the Mixed Model framework we are using, the marginal constituency where the national party constraint (k) on the *Republican* candidate just bites is given by $m^* + d = k$. So for given dispersion parameter *d*, if k declines - that is, if the Republican national constraint on local candidate positioning becomes weaker - so must m*. But if there is a shift in m* in this way, a Republican candidate at the 'edge' of what is acceptable in his or her party will now be fully competitive in a wider range of (more) liberal states. The analogous result holds for Democrats.

While the effect of changing the constraint is straightforward, to allow for empirical implementation of this result in the next section we need to ask about what determines k. A change in *that* factor can be used to formulate another testable hypothesis. Following Aldrich and Rodhe (1998, 2000), Aldrich and Battista (2002), Aldrich et al. (2007) and Winer et al.

(2008), we may assume that the less heterogeneous is a party's national caucus, the easier is it for the party to suppress dissent and to impose a more uniform ideology on its members once they are elected.[23] In addition, a more unified caucus presents a sharper national party image, making it harder for candidates credibly to take positions in any given state that deviate from the national party location. Finally, as a party caucus becomes more homogeneous, party activists and interest groups whose previously extreme positions now become more mainstream, may feel emboldened to support non-centrist challengers to party incumbents who lack sufficient ideological "purity." Hence as heterogeneity *within* a national party decreases, the tethers on their local candidates, represented by k in our simple model, are expected to become shorter, and some local candidates will then be less able to respond to local electoral conditions. The opposite logic applies for an increase in the heterogeneity of a national party caucus.

Using the Mixed Influence Model, a second important comparative statics result follows immediately: as the within-party heterogeneity of a national caucus declines (increases), the number of highly competitive elections will decrease (increase).

3.3   *Accounting for the effects on competitiveness of the structure of the primaries*

We turn now to consider the impact of party primaries, which introduce a second stage into the electoral process. This leads to the third hypothesis we introduced in the introductory section. A candidate must win his or her party's nomination before battling the other party's nominee in the general election. In an open primary, a party's members, independents, and often members of the other party are allowed to participate in selecting the party's nominee. In contrast, only a party's members are allowed to vote in a closed primary. Some authors have hypothesized that having to satisfy only own-party members in the primary makes a candidate adopt a more extreme platform, and the more or less uniform empirical finding is that primary

winners in states where only party members can vote in a 'closed' primary tend to have somewhat more extreme ideological platforms (Gerber and Morton 1998; Grofman and Brunell 2001; and Heckelman 2004), although the effects found are not large. Accepting the empirical evidence cited that closed primaries increases the distance between candidates of opposite parties, in our model the effect of having a closed primary then becomes analogous to the effect of an increase in the ideological dispersion of the local electorate. Thus having a closed primary will increase the number of states with competitive races.[24]

A numerical example will illustrate the impact of changing the primary rules and explain why the analogy is appropriate. Again we rely on our example of the Mixed Influence Model that is based on adding constraints to a simple version of the Palfrey [1/4, 3/4]. Suppose that Republican activists begin to influence local Republican candidate platforms when the cutoff parameter k equals 30, and assume that $d = 10$. Then since $m^* + d = k$ in the contest where the constraint just binds, $m^* = 20$. Let us associate this solution with the electoral equilibrium that emerges when primaries are open.

Now consider the same states when primaries are closed. While the distribution of voter ideal points does not change, the location of party platforms on the distribution of preferences does. To be consistent with the empirical literature, we should assume that platforms are more extreme in the closed primary case. In particular, assume that the platform selection goes from [1/4, ¾] in an open primary to [1/5, 4/5], i.e., a more extreme set of platforms. As before, the distribution ranges from m-2d to m+2d, and the quintiles occur at m-1.2d, m-0.4d, m+0.4d and m+1.2d. The [1/5, 4/5] analysis follows: $m^* + 1.2 \times 10 = 30$ and so $m^*=18$. Thus, closed primary states with median ideology scores as low as 18 will be highly competitive from the perspective of Republican candidates facing a constraint of $k = 30$, compared to the situation in which

primaries are open. In other words, given the ideological distribution of voters and the nature of external constraints on candidate positioning, more states (with medians between 18 and 20) will now be more likely to have highly competitive contests because the Republican candidates there are now able to adopt fully competitive election platforms.

Generalizing, the greater distance between the two party positions in closed primary states means that the Republican candidate in a very liberal state is closer to the platform desired by the Republican National Party and its supporters, which reduces the likelihood that the Republican candidate is too liberal for the Republican National Committee or party activists. Similarly, Democratic candidates in very conservative closed primary states are less likely than candidates in very conservative open primary states to run afoul of the Democratic National Party or Democratic activists. Thus in the Mixed Influence Model, we can state the hypothesis that competitive Senate elections are expected to be more common in closed primary states than in open primary states.

It is important to note that this third hypothesis is different from the inference one might draw using only the empirical literature on the effect of primaries cited above. If all we take into account is that candidates of the minority party in the state will be pulled somewhat toward the overall median in the state owing to cross-party voting in open primaries, it would be tempting to conclude that open primary states will be more competitive than closed ones.

There is one further complication to be addressed when considering the effect of primary rules on competitiveness, which is that the nature of the primary in a state may not be independent of the distribution of voter preferences there. Snyder and Ting (2011) argue that there is in fact endogeneity in the choice of the primary rules. While they are only interested in why primaries are adopted, rather than in which type is chosen, the logic of their paper suggests

that states with dominant parties are more likely to adopt closed primaries. If so, then for this reason, closed primaries will tend to be correlated with less competition, confounding the theoretical expectation based on the Mixed Influence Model that we have derived above.[25]

4.   Measurement, estimation of the spline and basic results

We have seen that in the Mixed Influence Model, there are at least three regions in the ideological dimension of voters' preferences: one where the Democratic candidate for the Senate is likely to win, one where the Republican is likely to win, and a highly competitive middle region of some length in-between. In this section we explain how estimation of a three-segment spline can be used to determine the size of each of these regions and thus, the number of highly competitive states. While the determination of the *number* of highly competitive states is of interest in its own right, it is more important in the present context that we can use the estimated spline to test the three hypotheses developed above.

For space reasons, we have placed a discussion of the complexities of implementing the Mixed Influence Model empirically - the choice of sample and of subsamples, details about estimation of the spline, some additional discussion of basic results, additional robustness checks with respect to measures of voter ideology and heterogeneity, and allowance for the effects of voter realignments - into an on-line Methodological Appendix.[26] Here we deal only with the main ideas.

The spline is a linear and piecewise continuous function that changes slope at two unknown break points. [Envision three pencils strung together.] The break points define the boundaries of the two regions of party dominance, with the segment in between representing the subset of highly competitive elections. States that are more liberal than that represented by the first break point are expected to be Democratic strongholds. States that are between the two

breakpoints are hypothesized to have highly competitive state-wide elections. And states that are more conservative than the position associated with the second breakpoint are expected to be in a region of Republican dominance. By suitably segmenting the subsamples over which such a spline is estimated, it will be possible to test our three key comparative static predictions.

We proceed by first defining the variables used in the basic estimation of the spline segments and then turn to some essential details of the estimation procedure itself. Finally, some basic results are presented using the entire sample to show that the three-segment spline fits the data well. The comparative static predictions are then tested in the following section.

4.1   *Measuring electoral competitiveness, voter ideology and its heterogeneity, heterogeneity of national party caucuses and primary rules*

To construct Senate election competitiveness and voter ideology variables used to estimate the spline, we use state-level data on election returns for presidential and U.S. Senate elections from Moore et al. (2001) and from Scammon et al. (various years), between 1922 when direct election of Senators was fully implemented, and 2004. Between 1922 and the end of 2004, there were 1473 general elections for a U.S. Senate seat. We omit the 14 Senate elections in which a third party candidate won.

The data are aggregated into seven 12-year time periods: 1922-1933, 1934-1945, 1946-1957, 1958-1969, 1970-1981, 1982-1993, and 1994-2004. Averaging across all Presidential elections or across all Senate elections in a 12-year period produces measures of political competitiveness and of voter ideological preferences that use data from of all of the elections, and that allow for integration of staggered Senate elections and presidential elections.[27] (The operationalization of these data is discussed below.) The completed sample of election outcomes consists of 341 state-time observations on vote shares for Republican senate candidates and on

the Republican vote share in each state in the Presidential elections. The dependent variable for estimation of the spline - denoted *REPUBLICAN SENATE SHARE* - is defined as the average Republican vote share in all Senate elections in each 12-year time period in each state. It has a mean of 0.46. These are the data summarized in Table 1.

The main explanatory variable is a measure of voter ideology in each state, suitably averaged over time. To measure voter ideology on a liberal-conservative axis, we utilize three alternative independent variables. A first one is simply the average share of the major two-party vote for the Republican presidential candidates in the three presidential elections in each of the 12-year state-time cells, denoted *REPUBLICAN PRESIDENTIAL SHARE*. Results based this variable are reported in Tables 2a, 3a, 4a, and 5a in the Methodological Appendix.

Since a given percentage vote for the Republican presidential candidate in any state may have different meanings in national Democratic landslides (e.g., 1964), close elections (e.g., 1960, 2000), and Republican landslides (e.g., 1972), our preferred measure of the ideology of a state's voters ranks each state on the national *distribution* of support for Republican presidential candidates in each presidential election. We refer to this variable, averaged over a 12 year period, as *REPUBLICAN PRESIDENTIAL RANK* and report results based on it in Tables 2, 3, 4, and 5 (in the text).[28] More information on these two variables plus a third variation, can be found in the on-line Appendix. Our results are robust to these alternative definitions.

Following Aldrich and Rodhe (1998) and others, we use the heterogeneity of a party's national caucus in Congress as an indicator of the ability and interest of the national party and of activists to impose restrictions on the platforms offered by local candidates.[29] To measure within-party heterogeneity of the caucuses in Congress for this purpose, we use the standard deviation of the first dimension of DW-Nominate scores across each party's members in the US

House of Representatives. (Note that this is the House and not the Senate.) We first calculate

the standard deviation in the DW-Nominate scores for each biennial Congress and then average

these standard deviations within each of the seven 12-year periods. Then the standard deviations

for the two parties are averaged and the period values of this average are ranked. By this metric,

the national parties were the least heterogeneous in 1922-1933 (s.d.=0.135), 1934-1945

(s.d.=0.150), and 1994-2005 (s.d.= 0.160) and were the most heterogeneous in 1946-1957

(s.d.=0.181), 1958-1969(s.d.=0.192), and 1970-1981(s.d.=0.193). (Period 6, 1982-1993, is the

median time period and is omitted.) Testing of the comparative statics result concerning

heterogeneity in national party caucuses is accomplished by segmenting the sample used to

estimate a spline into low and high heterogeneity subsamples.

Similarly, we test the comparative static prediction concerning heterogeneity in the

ideological preferences of state level electorates by estimating splines over low and high state-

specific ideological heterogeneity subsamples. We proceed as follows: in each state with more

than a single congressional seat, we use the standard deviation in the first, liberal - conservative,

dimension of DW-Nominate scores for a state's delegation in the US House of Representatives.

We expect that states in which most of the representatives have similar voting records will have

less dispersion in voter ideology than in states like Florida, in which the state's delegation ranges

from extremely liberal in south Florida, to extremely conservative in Florida's panhandle. This

strategy is similar to that used by Goff and Grier (1993) to characterize the heterogeneity of a

state's electorate; their measure of voter heterogeneity – the standard deviation of Conservative

Coalition voting scores in the state's House delegation – is, however, not available for the early

years in our sample.

It should be noted that to segment the sample according to the dispersion of ideological

preferences, we do not require that DW-Nominate indexes be direct representations of

ideological preferences of local electorates (in House districts) at a point in time. What is needed

here is that *variation* in the preferences of voters in a state be positively correlated with *variation*

in the DW-Nominate indexes of their elected House representatives. Although we think that the

DW-Nominate data satisfy this requirement, we also consider the results of using other measures

of the ideological heterogeneity of state voters in the Appendix.

Finally we turn to the representation of the structure of the primaries. The longest

consistent classification of states according to the type of primary they utilize is found in *The

Book of the States* (Council of State Governments, various years). We utilize the classification

found in volumes 10-28 (1954-1991), in which the primary was described as "voters receive

ballots of: [one party] or [all parties participating]."[30] We extended this classification of state

primary systems to 2005 by utilizing tables found in Bott (1990), Bibby (1992, 1996, 2000) and

Bibby and Schaffner (2008). See the on-line Appendix for more details.

4.2   Estimating the spline

The basic spline we estimate over various samples explains the competitiveness of Senate

elections measured by *REPUBLICAN SENATE SHARE,* using on the right-hand side the

ideological character of state electorates given by *REPUBLICAN PRESIDENTIAL RANK*

divided (by the estimation) into three *SPLINE SEGMENTs.* This OLS estimating equation,

absent some non-spline control variables added later, and the error term is:

$$REPUBLICAN\ SENATE\ SHARE\ =\ \alpha + \beta_1\ (1^{st}\ SPLINE\ SEGMENT) +\ \beta_2\ (2^{nd}\ SPLINE\ SEGMENT)$$
$$+ \beta_3\ (3^{rd}\ SPLINE\ SEGMENT),$$

$$(1)$$

where it is expected that $\beta_1 > 0,\ \beta_2 \approx 0\ and\ \beta_3 > 0.$

Figure 3 illustrates the spline. Here *BREAK1* provides the location that separates

Democratic stronghold states in the first spline segment from highly competitive states in the

second segment, and *BREAK2* gives the location at which the highly competitive region meets the region of Republican strongholds. These break points, the three slope coefficients, and with them the length or size of the competitive region, are all estimated together. The restrictions on the expected sign and relative sizes of the coefficients in (1) are explained below.

[Figure 3 here]

In addition to testing its' comparative static predictions, further evidence about the usefulness of the Mixed Influence Model is provided by testing the restrictions it imposes on the signs and relative sizes of the coefficients attached to each estimated region of competitiveness in the spline. To see why β_1 is expected to be positive, consider a state in which the median voter is quite liberal, so that it falls into the first region as measured by *REPUBLICAN PRESIDENTIAL RANK*. Republican candidates in such heavily Democratic states are pressured by the national party to take more conservative positions than would be optimal in statewide elections, and so they will tend to garner more votes (even if they don't win) when the median voter in this state moves to the right and becomes *more* conservative. This follows because the conservative platform dictated by the national party or its activists, which effectively constrains the local Republican candidate, will now be closer to a highly competitive platform for the state.

In moderate or centrist states, the locally optimal party platform in the Mixed Model is close enough to that of the national party that there is little pressure on the local candidate to deviate from this platform. Senate races in such states are predicted to be fully competitive. In particular, and somewhat counter intuitively, Republican candidates for the Senate should not fare much better in moderately Republican states than in moderately Democratic ones. Thus the coefficient on state support for Republican presidential candidates in this middle, highly competitive region, β_2, should be close to zero, and small relative to the coefficient on the first

region and, as we shall see, relative to that applying to the third region as well.

The third segment applies to the most conservative states. Here Democratic candidates are unable to select the most competitive platforms owing to pressure from the Democratic national party or its activists, or because voters in the state will not believe Democratic candidate claims to be very conservative.[31] Thus as voters in such states become *more* conservative, the Democratic candidates' platform constraints will force them to depart even further from the platform that maximizes their chances of winning, allowing Republican candidates to enjoy even greater success. Hence we should expect the coefficient on this third region, β_3, to be positive and larger than that on the middle region.

To complete the specification of the spline, we must allow for some controlling factors. When we use presidential election returns over a long time horizon, we need to be careful to control for regional and period effects. In particular, since our measure of a state's ideological location does not take into account the ebbs and flows over time in the two parties' successes, we add time period dummies to equation (1) in order to capture any such time-specific effects. Regional effects are dealt with by choice of subsamples, as discussed later and in the Appendix.

It is also well known that an incumbent has a considerable electoral advantage. The actual estimating equations we employ allow for incumbency effects in two ways. The first method utilizes the full sample, which consists of both closed seat elections which involve an incumbent, and open seat elections and adds to (1) a variable that controls for incumbency effects. In each election a variable is created that equals 1 if the Republican candidate was an incumbent, -1 if the Democratic candidate was an incumbent, and 0 if neither candidate was a major party incumbent so that the Senate seat was 'open'. *REPUBLICAN INCUMBENT ADVANTAGE* is the average of this variable in all of a state's elections during a given 12-year

period, and this variable is entered into all regressions that are based on closed seat as well as open seat elections. It has a mean of -0.09 and ranges between -1 and 1. It is expected to be positively related to Republican electoral success.

To allow for the possibility that there may be unobserved interaction between incumbency and allow for some other explanatory variables, or incumbency and estimation of the break points, the second procedure confines the statistical analysis to 'open seat' subsamples, where no incumbents are on the ballot.[32] Limiting the sample to open elections reduces the sample to 251 cells, from the full, open plus closed election sample of 341.

In all samples where it is introduced, *REPUBLICAN INCUMBENT ADVANTAGE* always turns out to be a statistically significant determinant of *REPUBLICAN SENATE SHARE.* As this effect is not of direct concern in the paper, we shall not discuss it further in what follows.

4.3   Basic results

Basic regression results explaining the outcome of Senate elections are reported in Table 2. The regressions in Table 2 are based on a symmetry assumption that all possible break points in the *REPUBLICAN PRESIDENTIAL RANK* are equidistant from 0.5, In Table 2a in the On-Line Appendix, this assumption is relaxed to allow for asymmetry in platforms around the median ideological preference of state voters. Each of these tables contains four regressions over the entire 1922-2004 period based on combinations of the two geographically defined samples - the full sample, and the sample excluding the 11 southern states of the Confederacy - and two samples differentiated by whether or not there was an incumbent seeking reelection.

[Table 2 here]

Consider the first regression in Table 2, which is estimated on the assumption that the break points are equidistant from 0.5. This equation results from searching over the potential

pairings of the break points (*BREAK1, BREAK2*) that cover the range of *REPUBLICAN PRESIDENTIAL RANK*. That is, we compared the mean squared error (MSE) from the regression in which *BREAK1*=0.05 and *BREAK2*=0.95, the MSE when *BREAK1*=0.06 and *BREAK2*=0.94, and so on, ending with the MSE when *BREAK1*=0.45 and *BREAK2*=0.55. The breakpoint pair that minimized the mean squared error and thus provided the best fit, is 0.20 and 0.80, so based on this regression the highly competitive region ranges from 0.20 to 0.80.[33] Since *REPUBLICAN PRESIDENTIAL RANK* is constructed under the assumption that the states are equally spaced in the ideological dimension, this implies that 60% [(0.80 - 0.20) × 100] of the states have highly competitive elections. If the 60% rate is applied to all 50 states, we can conclude that 30 (=0.60×50) of the 50 states have highly competitive elections. (We note that to facilitate comparisons for the reader across samples, all of the estimates of the number of states with competitive elections will be calculated as if there are 50 states available in the sample used.)

The coefficients on the first spline segment, representing Democratic dominance, are all positive, as predicted by the Mixed Influence framework. The positive coefficients indicate that the advantage of Democratic candidates over Republican candidates for the Senate in Democratic strongholds erodes as the state becomes more Republican. Since the coefficient signs are predicted by the theory, one-tailed tests of significance are appropriate. All eight first-segment coefficients are statistically significant, The coefficients for the third spline segment, corresponding to the region of Republican dominance, also have the predicted positive signs and six of the eight are statistically significant. In all but one comparison, the middle coefficient is smaller, and generally much smaller, than the first or third spline segment coefficient, as we should expect if the Mixed Model is correct. The competitiveness of Senate races is *relatively*

insensitive to variation in the ideology of the voters in the middle or competitive segment.

Summarizing the results based on the regressions in Table 2, we can say that these regressions fit the data well and produce results that are consistent with the claim that the three spline segments predicted by the Mixed Influence Model can be estimated reliably.

5. **The three major hypotheses**

We now turn to the testing of the three key comparative predictions of the Mixed Influence Model.

5.1 *The effects on competitiveness of heterogeneity in the national party*

We hypothesized that candidates will be given a longer leash (or tether) in order to tailor their platform to the local electorate when their national party is more heterogeneous, and hence less able or willing to impose constraints on local candidates. For this reason, more heterogeneity in a party caucus allows more candidates to select a fully competitive platform, leading to more races that are highly competitive.

The prediction that greater heterogeneity within national party caucuses leads to more competition in local Senate races receives strong support in all eight comparisons reported in Table 3. As explained earlier, to measure within-party heterogeneity in Congress we use the standard deviation of the first dimension of DW-Nominate scores across each party's members in the U.S. House of Representatives. The eight comparisons are based on the four subsamples used in Tables 2 and 2a under both symmetrical and asymmetrical break points. There are more competitive states – i.e., the middle spline region is longer - when the national parties are more heterogeneous than when the national parties are less heterogeneous. On average across the estimated regressions, in the periods of greater heterogeneity in the national parties, there are estimated to be 17 more states with highly competitive Senate races.

[Table 3 here]

5.2   The effects on competitiveness of within-state voter heterogeneity

Greater heterogeneity of voter preferences in a state pulls the fully competitive local (state) party platforms further apart in the Mixed Influence Model, and in some cases this will make one or more national party constraints superfluous. This reasoning about the interaction of constraints and voter heterogeneity leads to a second key hypothesis: competitive Senate elections should be more common in states where voters are more heterogeneous. To test this prediction, we require a measure of heterogeneity of the state's electorate in the ideological dimension. As noted earlier, we measure heterogeneity in the electorate in each state by the standard deviation in the first (liberal-conservative) dimension of DW-Nominate scores for that *state's* delegation in the US House of Representatives.

Using the DW-Nominate indexes, we proceed by creating two subsamples - low standard deviation of DW-Nominate score states and high standard deviation states - and then estimate equation (1) for both samples. The resulting symmetrical break points, which measure the length of the middle or highly competitive segment, are reported in the upper panel of Table 4 for the four low heterogeneity/high heterogeneity subsamples used in Table 2.

[Table 4 here]

The prediction of the Mixed Influence Model that competition is more pervasive in more heterogeneous states is supported in six of the eight comparisons in Table 4. In these eight comparisons, on average there were 11 more states with highly competitive Senate races in the more heterogeneous states than in the less heterogeneous states.

5.3   The structure of party primaries and political competitiveness

A third key comparative static prediction of the Mixed Model concerns the role of

primary elections. Party platforms tend to be somewhat farther apart in closed primary states, where only a party's members can select the party's nominee, than in open primary states where independents and perhaps members of other parties also are allowed to participate in the nomination process. If so, and if primary elections are more or less the same as general elections, the effect on competitiveness of closed versus open primaries should be analogous to the effect of an increase in the heterogeneity of the local electorate.

Comparisons of the competitiveness of elections under closed primaries with that under open primaries are reported in Table 5, for the same set of variations as reported in previous tables. The prediction that competition is more common with closed primaries is supported in 5 of the 8 comparisons. On average, there are 4 more states with competitive elections under closed primaries than with open primaries. This is a smaller effect than for the other factors, perhaps reflecting the modest or weak effect of primaries on platform divergence reported in the literature cited earlier, and possibly also reflecting an endogeneity in the choice of primary rules discussed by Snyder and Ting (2002).[34]

[Table 5 here]

6.   **Robustness checks and other statistical issues**

Other results can be found in the Methodological Appendix. Our results generally are quite insensitive to (i) which of three variables is used to represent voter ideology; (ii) whether the sample consists of ten eight-year periods or seven 12-year periods; (iii) whether the sample includes the Great Depression and World War II; (iv) whether the standard deviation in a state's DW-NOMINATE score in the state's delegation is based on the states with at least two members or on the states with at least three members; (v) how political realignment is treated; (vi) whether the Southern states were excluded; and (vii) whether the sample is confined to open-seat

elections. We also consider demographically based measures of House district heterogeneity inspired by Koetzle (1998).[35]

Finally, it is important to note that our use of a three-segment spine is validated by the better overall fit obtained when using a three-segment spline than when a two-segment spline or a four-segment spline is employed.

7.   Conclusions and further research

There can be various reasons for a party's candidates not doing well in some states on average over time while also achieving success in others. We have argued that constraints on positioning by local candidates emanating from the national parties or party activists and donors, interacting with the heterogeneity of local electorates, can lead to uncompetitive elections in some contests while leaving local candidates free to adopt politically optimal platforms elsewhere.[36] By 'interacting', we mean that such constraints are more likely to prevent local candidates of one or the other party from taking up fully competitive positions when the electorate they face is relatively ideologically cohesive. The nature of the constraints, which can be proxied using a measure of the heterogeneity of a party's elected caucus, and the heterogeneity of local electorates may both change over time and across space, producing substantial variation in the degree of political competitiveness even in a mature democracy. In developing this framework, we have moved away from a simple Downsian story of competitive contests everywhere, without moving to the opposite pole of competitive contests nowhere.

Being able to identify states in which the Democratic party has an advantage or in which the Republican party is favored is only a starting point for the framework we have presented. The Mixed Influence Model we have developed not only explains this observed pattern of political competition theoretically, a novelty in its own right, but it also yields interesting and non-

obvious predictions about how many states will be competitive. Moreover, the model goes beyond median voter effects by bringing in the effects of internal party heterogeneity at the national level, and the effects of both local voter heterogeneity and party primary structure at the state level.

To test our Mixed Influence framework, which combines ideas about the role of national constraints and about optimal local candidate positioning, we have studied elections for the U.S. Senate from 1922 to 2004. On average, across the estimated spline regressions that embody our Mixed Model, a large number of states - approximately 30 states in all - are classified as highly competitive and having very small estimated winning margins, which range between 0 and 0.064 as a share of the local two-party vote. The predictions of the model that there are more states with competitive elections when the national parties are less cohesive, and when a typical state's voters are more heterogeneous, are well supported empirically. We find that there are on average (across our symmetrical estimates) 17 more states with competitive Senate races in years in which the national parties are relatively heterogeneous, and that there are on average 11 more competitive states in the heterogeneous state sample than in the relatively homogeneous one. The third prediction concerning the effect on competitiveness of closed versus open primaries is less well supported: there are four more states with competitive Senate elections in states with closed primaries than in states with open primaries.

In our broad set of highly competitive states, candidates appear to have considerable latitude in selecting platforms before the national party or local activists withhold support, or other factors kick in that would constrain a candidate's ability to stray from national party positions or run on positions that differ from the national party image. Also, in the competitive states, there is little difference in the vote shares received by Republican candidates in

moderately Republican states and the votes garnered by Republican candidates in moderately Democratic states.

Furthermore, the evidence concerning our major hypotheses about the effects of heterogeneity in national caucuses and heterogeneity in local electorates on the number of competitive states is remarkably robust in several ways. As can be seen in Tables 3 to 5, similar results are found: in the open seat sample; in the total sample of open seat races plus contests with an incumbent; and when southern states are excluded or included. Similarly, we show in the Appendix that we get similar results when the two spline break points are symmetrically located around 0.50 as when they are not so constrained.

There are several directions for future research suggested by the results we have presented and by the model underlying them that we have developed. To conclude, we note three of these. First, our framework suggests that it would be worthwhile to study how heterogeneity or diversity within and across state electorates evolves over time, and how this evolution in turn shapes longer-run trends in electoral competitiveness.[37] In this paper we mainly have explored the cross-sectional aspect of the data. Second, it would be interesting to see if the predictions of the Mixed Influence Model hold in elections for the House of Representatives, or at other levels of government. Finally, it would be desirable to extend our theoretical framework to a broader context in which the tightness of constraints placed on local candidates is determined endogenously by the nature of diversity within party caucuses in Congress which, in turn, via effects on the competitiveness of local elections, helps to determine local electoral success and hence the degree of polarization of national party caucuses.

References

Abramowitz, A. I., Alexander, B. & Gunning, M. (2006). Incumbency, redistricting, and the decline of competition in US house elections. *Journal of Politics,* 68(1), 75-88.

Adams, J., Merrill, S. & Grofman, B. (2005). *A unified theory of party competition: a cross-national analysis integrating spatial and behavioral Factors.* Cambridge University Press.

Aldrich, J. H. (1983). A Downsian spatial model with party activism. *American Political Science Review*, 77(4), 974-990.

Aldrich, J. H. & Rohde, D. W. (1998). Measuring Conditional Party Government. Presented at the Annual Meeting of the Midwest Political Science Association.

Aldrich, J. H. & Rohde, D. W. (2000). The Republican Revolution and the House Appropriations Committee. *Journal of Politics,* 62, 1–33.

Aldrich, J. H & Battista, J.S. (2002). Conditional Party Government in the States. *American Journal of Political Science*, 46(1), 164-172.

Aldrich, J. H., Rohde, D. W. & Tofias, M. (2007). One D is not enough: measuring conditional party government, 1887-2002. In D. Brady and M. McCubbins (Eds). *Party, process, and political change in congress, Vol, 2*. Stanford University Press, 102-112.

Ansolabehere, S., Snyder, J. M. Jr., & Stewart, C. III. (2001). Candidate positioning in US house elections. *American Journal of Political Science*, 45 (1), 136-159.

Aranson, P. H. & Ordeshook. P. C. (1972). Spatial strategies for sequential elections. In G. Niemi and H.F. Weisberg (Eds.), *Probability models of collective decision making,* 298-331. Columbus OH: Charles Merrill.

Austen-Smith, D. (1984). Two-party competition with many constituencies. *Mathematical Social Sciences*, 7 (2), 177-198.

Austen-Smith, D. (1987). Parties, districts and the spatial theory of elections. *Social Choice and Welfare*, 4(1), 9-23.

Berry, W. D. & Canon, B.C. (1993). Explaining the competitiveness of gubernatorial primaries. *Journal of Politics*, 55(2), 454-471.

Besley, T. Persson, T. & Sturm, D. M. (2010). Political competition, policy and growth: theory and evidence from the united states. *Review of Economic Studies*, 77, 1329–1352.

Bibby, J. F. (1992). *Politics, parties, & elections in America*. Second edition. Chicago, Nelson-Hall Publishers.

Bibby, J. F. (1996). *Politics, parties, & elections in America*. Third edition. Chicago, Nelson-Hall Publishers.

Bibby, J. F. (2000). *Politics, parties, & elections in America*. Fourth Edition. Belmont CA: Wadsworth Publishers.

Bibby, J. F. & Schaffner, B.F. (2008). *Politics, parties, & elections in America*. Fourth Edition. Boston MA: Thomson Wadsworth Publishers.

Bond, J. R. (1983). The influence of constituency diversity on electoral competition in voting for congress, 1974-1978. *Legislative Studies Quarterly*,7, 201-217.

Bott, A. J. (1990). *Handbook of US election laws and practices*. Greenwood Press.

Buchler, J. (2009). Rejoinder to 'the sub-optimality of competitive elections: comment. *Public Choice*, 138, 1-2.

Callander, S. (2005). Electoral competition in heterogeneous districts. *Journal of Political Economy*, 13, 1116-1145.

Calvert. R. L. & Isaac, R. M. (1981). The inherent disadvantage of the presidential party in midterm congressional elections. *Public Choice*, 36, 141-146.

Carsey, T. M. & Harden, J. J. (2010). New measures of partisanship, ideology, and policy mood in the American states. *State Politics & Policy Quarterly*, 10 (2), 138-158.

Caughey, D. & Sekhon, J.S. (2011). Elections and the regression discontinuity design: lessons from close US houses, 1942-2008. *Political Analysis,* 19, 385-408.

Coleman, J. S. (1971). Internal processes governing party positions in elections. *Public Choice*, 11, 35-60.

Coleman, J. S. (1972). The positions of political parties in elections. In R.G. Niemi and H.F. Weisberg (Eds.), *Probability models of collective decision making,* 332-357. Columbus, OH: Charles E. Merrill.

Coughlin, P. (1992). *Probabilistic voting theo*ry. New York: Cambridge University Press.

Council of State Governments. (various years). *The book of the states*. Lexington, KY.

Cox, G., & Munger, M. C. (1989). Contributions, expenditure, turnout: the 1982 US house elections. *American Political Science Review,* 83, 217-231.

Downs, A. (1957). *An Economic Theory of Democracy*. New York, Harper and Row.

Endersby, J., Galatas, S., & Rackaway, C. (2002). Closeness counts in Canada: voter participation in the 1993 and 1997 Federal Elections. *Journal of Politics*, 64 (2), 610-631

Ensley, M. J. (2012). Incumbent positioning, ideological heterogeneity and mobilization in US house elections. *Public Choice*, 151, 43–61.

Esiasson, P. (1999). Not all politics is local: the geographic dimension of policy representation. In W. E. Miller, R. Pierce, J. Thomassen, R. Herrera, S. Holmberg, P. Esiasson, and Wessels, B. eds. *Policy Representation in Western Democracies,* 110-136. Oxford: Oxford University Press.

Ferreira, F. & Gyourko J. (2007). Do Political Parties Matter? Evidence from US Cities. *Quarterly Journal of Economics* 124(1): 349-397.

Ferris, J. S, Park, S. B. & Winer, S. L. (2008). Studying the role of political competition in the evolution of government size over long horizons. *Public Choice*, 137, 369-401.

Filer, J. E. & Kenny, L. W. (1980). Voter turnout and the benefits of voting. *Public Choice*, 35(5), 575-585.

Francis, W. L. & Kenny, L. W. (2000) . *Up the political ladder: career paths in US politics*. Thousand Oaks CA; Sage.

Franklin, M. (2004). *Voter turnout and the dynamics of electoral competition in established democracies since 1945*. Cambridge: Cambridge University Press.

Froman, L. A. (1963). *Congressmen and their constituencies*. Chicago: Rand McNally & Co.

Galasso, V. & Nannicini, T. (2011). Competing on good politicians. *American Political Science Review,*105(1), 79-99.

Gerber, E. & Morton, R. B. (1998). Primary election systems and representation. *Journal of Law, Economics, and Organization,* 11, 304-324.

Gerber, E. & Lewis, J.B. (2004). Beyond the median: voter preferences, district heterogeneity, and political representation. *Journal of Political Economy,* 112, 1364-1383.

Goff, B. L. & Grier, K. B. (1993). On the (mis)measurement of legislator ideology and shirking. *Public Choice,* 76, 5-20.

Gomberg A. M., Marhuenda, F., & Ortuno-Ortin, I. (2004). A model of endogenous political party platforms. *Economic Theory,* 24, 373–394.

Greenberg, J & Shepsle, K. (1987). The effect of electoral rewards in multiparty competition with entry. Ameri*can Political Science Review,* 81, 525-538.

Grofman, B. (1987). Models of Voting. 1987. In Samuel Long (Ed.), *Micropolitics Annual*, Greenwich, CT: JAI Press, 31-61.

Grofman, B. (2004). Downs and two-party convergence. *Annual Review of Political Science*, 7, 25-46

Grofman, B, Griffin, and Amihai Glazer. 1990. Identical Geography, Different Party: A Natural Experiment on the Magnitude of Party Differences in the US Senate, 1960-84. In R.J. Johnston, F. M. Shelley & P. J. Taylor (eds.), *Developments in electoral geography*. London: Routledge.

Harden, J. & Carsey, T. M. (2012). Balancing constituency representation and party responsiveness in the US senate: the conditioning effect of state ideological heterogeneity. *Public Choice,* 150, 137-154.

Heckelman, J. C. (2004). A spatial model of US senate elections. *Public Choice,* 118, 87-103.

Hibbing, J., & Brandes, S. (1983). State population and the electoral success of senators. *American Journal of Political Science,* 27, 808-819.

Hussey, W. & Zaller, J. (2011). Who do parties represent? In P. K. Enns & C. W. (eds.) *Who Gets Represented?* New York, Russell Sage, 82.

Jacobson, G. (2006). *The politics of Congressional elections, 7th edition.* New York NY: Longman.

Kanthak, K. & Morton, R. B. (2001). The effects of primary systems on congressional elections. In P. Galderisi & M. Lyons, (Eds.), congressional primaries and the politics of representation. Lanham, MD: Rowman and Littlefield.

Koetzle, W. (1998). The impact of constituency diversity upon the competitiveness of U.S. House elections, 1962-96. *Legislative Studies Quarterly,* 23(4), 561-573.

Lee, D.S., Moretti, E. & Butler, M.J. (2004). Do voters affect or elect policies? *Quarterly Journal of Economics*,119, 807-859.

Levitt, S.D. & Poterba, J. M. (1999). Congressional distributive politics and state economic performance. *Public Choice,* 99, 185-215.

Marshall, W. (1998). American political culture and the failures of process federalism. 22 *Harvard Journal of Law and Public Policy,* 139, (1998-1999)

Masket, G. (2009). *No middle ground: how informal party organizations control nominations and polarize legislatures*. Ann Arbor: The University of Michigan Press.

Mayhew, D. R. (1974). congressional elections: the case of the vanishing marginals. *Polity*, 6(3), 295-317.

Merrill, S. III, Grofman, B. & Brunell, T. L. (forthcoming). Modeling the electoral dynamics of party polarization in two-party legislatures. Journal of Theoretical Politics.

Moon, W. (2004). Party activists, campaign resources and candidate position taking: theory, tests and applications. *British Journal Political Science,* 34, 611–633.

Moore, J. L., J.P. Preimesberger, & D. R. Tarr, (Eds.) (2001). *Congressional Quarterly's Guide to US Elections*, 4th ed., Washington, D.C.: Congressional Quarterly Press.

Osborne, M. J. (1993). Candidate positioning and entry in political competition. *Games and Economic Behavior,* 5 (1), 133-151.

Palfrey, T. R. (1984). Spatial equilibrium with entry. *Review of Economic Studies,* 51, 139-157.

Palfrey, T. R. (1989). A mathematical proof of Duverger's Law. In P. C. Ordeshook (Ed.) *Models of Strategic Choice in Politics*. Ann Arbor: University of Michigan Press.

Pettersson-Lidbom, P. (2008). Do parties matter for economic outcomes? a regression-discontinuity Approach. *Journal of the European Economic Association,* 6, 1037-1056.

Polborn, M. (2014). Political competition in legislative elections. Presented at the Economics Seminar, University of California, Irvine, January 13.

Poole, Keith T. & Rosenthal, H. (1984). The polarization of American politics. *Journal of Politics,* XLVI : 102–131.

Poole, Keith T. & Rosenthal, H. (1997). *Congress: A Political Economic History of Roll Call Voting*. Oxford: Oxford University Press.

Poutvaara, P. (2003). Party platforms with endogenous party membership. *Public Choice,* 117, 79–98.

Remmer K. L. and Wibbels, E. (2000). The subnational politics of economic adjustment. *Comparative Political Studies,* 33(4), 419-451.

Robertson, D. (1976). *A Theory of Party Competition*. London: John Wiley & Sons.

Roemer, J. E. (2001). *Political Competition*: *Theory and Applications*. Cambridge: Harvard University Press.

Scammon, R. M., McGillivray, A. V. & Cook, R. (Various years). *America Votes: Election Returns by State*. Washington, D.C.: CQ Press.

Schofield, N. & Sened, I. (2006). *Multiparty Democracy: Elections and Legislative Behavior*. Cambridge: Cambridge University Press.

Snyder, J. M. Jr. & Ting, M. M. (2002). An informational rationale for political parties. *American Journal of Political Science*, 46 (1), 90-110.

Snyder, J. M Jr. & Ting, M. M. (2011). Electoral selection with parties and primaries. *American Journal of Political Science,* 55 (4), 782-796.

Sorauf, F. J. (1992). Inside campaign finance: myths and realities. New Haven CT: Yale University Press.

Taagepera, R. (1999). Ignorance-based quantitative models and their practical implications. *Journal of Theoretical Politics,* 11(3), 421-431.

Taagepera, R. (2007). *Predicting Party Sizes: The Logic of Simple Electoral Systems*. Oxford: Oxford University Press.

Taagepera R. & Shugart, M. (1989)*. Seats and Votes: The Effects and Determinants of Electoral Systems*. New Haven, CT: Yale Univ. Press.

Winer, S. L., Tofias, M., & Grofman, B. & Aldrich, J. (2008). Is it economics or politics? trending economic factors and the structure of Congress in the growth of government, 1930 - 2002. *Public Choic*e, 113, 389-402.

Wuffle, A, Owen, G., Feld, S.L. & Grofman, B. (1989). Finagle's law and the finagle point: a new solution concept for two-candidate competition in spatial voting games. *American Journal of Political Science,* 33(2), 348-375.

Table 1: The Extent of Political Competition in US Senate Races, 1922 – 2004
Distribution of │Republican Share of the Two-party Vote - 0.5│*

	0.00-0.05	0.05-0.10	0.10-0.20	0.20-0.30	0.30+
Open & Closed Seat Elections					
341 obs.*	39.9%	23.2%	19.9%	7.3%	9.7%
Open Seat Elections					
252 obs.*	40.1%	30.6%	15.1%	6.8%	7.5%

Open Seat Elections	0.00-0.05	0.05-0.10	0.10+
1922-1933			
48 states, 40 obs.	25.0%	25.0%	50.0%
1934-1945			
48 states, 43 obs.	27.9%	37.2%	34.9%
1946-1957			
48 states, 36 obs.	36.1%	25.0%	38.9%
1958-1969			
50 states, 37 obs.	64.9%	18.9%	16.2%
1970-1981			
49 states, 38 obs.	41.1%	40.5%	18.4%
1982-1993			
49 states, 28 obs.	46.4%	28.6%	25.0%
1994-2004			
49 states, 30 obs.	40.0%	43.3%	16.7%

Table 2: Symmetric Break Point Regressions Explaining the Average Share of the Two-party Vote Received by Republican Senate Candidate, 1922 – 2004.

Open Seat (No Incumbent) and Closed Seat (Incumbent) Races
(absolute t-statistics in parentheses)

	Open		Open and Closed	
	Full Sample	**Non-Southern States**	**Full Sample**	**Non-Southern States**
	(1)	**(2)**	**(3)**	**(4)**
Republican Incumbent Advantage			0.156	0.113
			(16.2)	(15.9)
Republican Presidential Rank				
1st Spline Segment	1.620	3.775	1.235	0.352
	(7.35)	(2.22)	(8.60)	(2.47)
2nd Spline Segment	0.186	0.087	0.125	0.072
	(4.34)	(3.46)	(4.26)	(3.30)
3rd Spline Segment	0.384	2.055	0.145	0.321
	(1.98)	(2.51)	(1.07)	(3.16)
1922-33	-0.043	0.034	-0.064	.0039
	(1.54)	(1.51)	(3.62)	(0.28)
1934-45	-0.101	-0.042	-0.076	-0.018
	(3.70)	(1.89)	(4.27)	(1.32)
1946-57	-0.056	.0072	-0.077	-0.015
	(1.96)	(0.32)	(4.36)	(1.09)
1958-69	-0.044	-0.037	-0.063	-0.029
	(1.55)	(1.68)	(3.54)	(2.20)
1970-81	-0.026	-0.015	-0.039	-0.021
	(0.94)	(0.65)	(2.19)	(1.56)
1982-93	-0.027	-0.030	-0.038	-0.027
	(0.91)	(1.24)	(2.12)	(2.05)
Break Points	**.20 .80**	**.06 .94**	**.20 .80**	**.19 .81**
RMSE	0.1148	0.0794	0.0870	0.0575
Adjusted R-square	0.4335	0.2186	0.6996	0.6507
No. of Observations	252	196	341	267
No. of competitive states	**30**	**44**	**30**	**31**

Note: Number of competitive states = (high breakpoint – low breakpoint) × 50

Table 3: Effect of National Party-Specific Constraints [measured by the std. dev. of DW-Nominate scores of party members in US House] on the Length of the Highly Competitive Middle Spline Segment, 1922 – 2004

Spline Variables based on State's Rank in Republican Presidential Vote
(Number of Observations in Parentheses)

Symmetrical Breakpoints

	Low Heterogeneity		High Heterogeneity	
	Break Points	#Competitive States	Break Points	#Competitive States
Open Seat (No Incumbent) Races				
Full Sample	0.32 0.68	18	0.06 0.94	44
	(113)		(111)	
Non-Southern States	0.15 0.85	35	0.06 0.94	44
	(86)		(88)	
Open Seat (No Incumbent) and Closed Seat (Incumbent) Races				
Full Sample	0.31 0.69	19	0.09 0.91	41
	(145)		(147)	
Non-Southern States	0.23 0.77	27	0.06 0.94	44
	(113)		(115)	

Asymmetrical Breakpoints

	Low Heterogeneity		High Heterogeneity	
	Break Points	#Competitive States	Break Points	#Competitive States
Open Seat (No Incumbent) Races				
Full Sample	0.34 0.85	26	0.06 0.90	42
	(113)		(111)	
Non-Southern States	0.45 0.83	19	0.05 0.55	25
	(85)		(88)	
Open Seat (No Incumbent) and Closed Seat (Incumbent) Races				
Full Sample	0.32 0.80	24	0.09 0.95	43
	(145)		(147)	
Non-Southern States	0.31 0.76	23	0.05 0.94	45
	(113)		(115)	

Notes: Number of competitive states = (high breakpoint – low breakpoint) × 50.
Periods of Low National Party Heterogeneity: 1922-1945, 1994-2005.
Median National Party Heterogeneity: 1982-1993 (not included in table).
Periods of High National Party Heterogeneity: 1946-1981.

Table 4: Effect of Within-State Voter Heterogeneity [measured by the std. dev. of DW-Nominate scores of a state's members in the US House] on the Length of the Highly Competitive Middle Spline Segment , 1922 – 2004

Spline Variables based on State's Rank in Republican Presidential Vote
(Number of Observations in Parentheses)

Symmetrical breakpoints

	Low Heterogeneity		High Heterogeneity	
	Break Points	#Competitive States	Break Points	#Competitive States
Open Seat (No Incumbent) Races				
Full Sample	0.31 0.69 (123)	19	0.15 0.85 (110)	35
Non-Southern States	0.44 0.56 (85)	6	0.16 0.84 (92)	34
Open Seat (No Incumbent) and Closed Seat (Incumbent) Races				
Full Sample	0.30 0.70 (154)	20	0.20 0.80 (155)	30
Non-Southern States	0.45 0.55 (105)	5	0.37 0.63 (130)	13

Asymmetrical breakpoints

	Low Heterogeneity		High Heterogeneity	
	Break Points	#Competitive States	Break Points	#Competitive States
Open Seat (No Incumbent) Races				
Full Sample	0.19 0.66 (123)	24	0.16 0.87 (110)	36
Non-Southern States	0.42 0.55 (85)	7	0.07 0.78 (92)	36
Open Seat (No Incumbent) and Closed Seat (Incumbent) Races				
Full Sample	0.19 0.59 (154)	20	0.38 0.69 (155)	16
Non-Southern States	0.45 0.90 (105)	23	0.37 0.83 (130)	23

Notes: Number of competitive states = (high breakpoint – low breakpoint) $\times$ 50

Table 5: Effect of Primary Structure on Length of the Length of the Highly Competitive Middle Spline Segment, 1954 – 2004*

Spline Variables based on State's Rank in Republican Presidential Vote
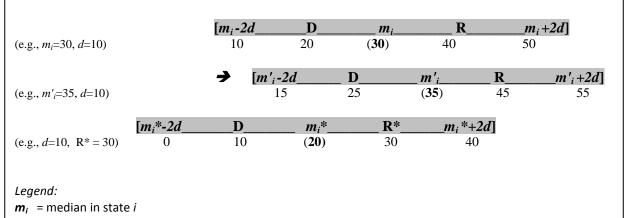(Number of Observations in Parentheses)

Symmetrical breakpoints

	Open Primaries		Closed Primaries	
	Break Points	#Competitive States	Break Points	#Competitive States
Open Seat (No Incumbent) Races				
Full Sample	0.08 0.92 (41)	42	0.06 0.94 (128)	44
Non-Southern States	0.08 0.92 (35)	42	0.06 0.94 (97)	44
Open Seat (No Incumbent) and Closed Seat (Incumbent) Races				
Full Sample	0.19 0.81 (64)	31	0.05 0.95 (181)	45
Non-Southern States	0.22 0.78 (53)	28	0.05 0.95 (140)	45

Asymmetrical breakpoints

	Open Primaries		Closed Primaries	
	Break Points	#Competitive States	Break Points	#Competitive States
Open Seat (No Incumbent) Races				
Full Sample	0.09 0.92 (41)	42	0.06 0.91 (128)	43
Non-Southern States	0.05 0.91 (35)	43	0.05 0.91 (97)	43
Open Seat (No Incumbent) and Closed Seat (Incumbent) Races				
Full Sample	0.10 0.89 (64)	40	0.17 0.90 (181)	37
Non-Southern States	0.12 0.88 (53)	38	0.20 0.93 (140)	37

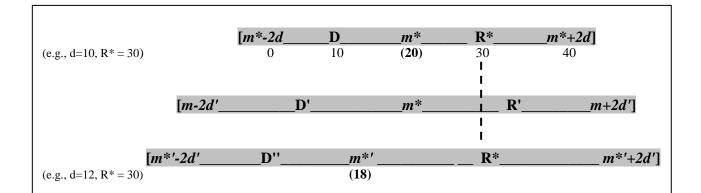**Notes:** Number of competitive states = (high breakpoint – low breakpoint)*50

Figure 1: Candidate positioning only under the threat of entry, and in the mixed model

$[m_i\text{-}2d$_____**D**_____ m_i_____ **R**_____$m_i\text{+}2d]$

(e.g., m_i=30, d=10)   10   20   (**30**)   40   50

➔ $[m'_i\text{-}2d$_____ **D**_____ m'_i_____ **R**_____$m'_i\text{+}2d]$

(e.g., m'_i=35, d=10)   15   25   (**35**)   45   55

$[m_i\text{*-}2d$_____**D**_____ m_i*_____ **R***_____m_i*$\text{+}2d]$

(e.g., d=10, R* = 30)   0   10   (**20**)   30   40

Legend:
m_i = median in state *i*
m_i* = median in marginal state where constraint on Republican just binds in equilibrium.
R* = position at which party-specific Republican constraint just binds in equilibrium.
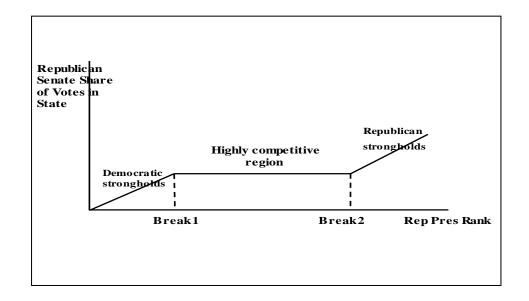
Figure 2: The Mixed Influence Model with an Increase in Voter Heterogeneity in the State

[$m*-2d$	D	$m*$	R*	$m*+2d$]

(e.g., d=10, R* = 30)

0	10	**(20)**	30	40

[$m-2d'$_____D'_____$m*$_____ R'_____$m+2d'$]

[$m*'-2d'$_____D''_____$m*'$ _____ __ R*_____ $m*'+2d'$]

(e.g., d=12, R* = 30)   **(18)**

Legend:
(i) The vertical dotted line represents the point at which the national constraints on the Republican candidate binds.
*(ii) **m*(m*')** = medians in marginal states where constraint R* on Republican candidate just binds, before and (after) the increase in the ideological dispersion of voters*

Figure 3: A Three-Segment Spline Explaining *REPUBLICAN SENATE SHARE*

Republican
Senate Share
of Votes in
State

Republican
strongholds

Highly competitive
region

Democratic
strongholds

Break1   Break2   Rep Pres Rank

Endnotes

[1] In a mature democratic system, political competition involves party and candidate entry *across elections;* competition for votes *in elections;* and competition within legislatures (or among different governments) *between elections*. Here we limit ourselves to the second of these aspects. Even though we do so, the literature on just this part of the general topic is substantial. There is a large literature starting with Downs (1957) that deals with how electoral competition affects voter turnout (e.g., Filer and Kenny 1980, Cox and Munger 1989, Endersby et al. 2002, Franklin 2004), and there are a smaller number of papers on how variation in competitiveness influences public policy, some addressing this question using data from U.S. states (e.g., Levitt and Poterba 1999, and Besley et al. 2010) or using data from other countries (Remmer and Wibbels 2000, Ferris et al. 2008, Galasso and Nannicini 2011). Also, regression discontinuity studies have focused on the candidates in close elections (e.g., Lee et al. 2004, Ferreira and Gyourko 2007, Pettersson-Lidbom 2008, Caughey and Sekhon 2011). Political competition has also been studied as a dependent variable. One component of this literature, also inspired by Downs, models candidate success by studying platform positioning relative to the median voter (e.g., Ansolabehere et al. 2001, Austen-Smith 1987, Gerber and Lewis 2004, Robertson 1976, Roemer 2001).

[2] A large literature has sought to understand competitiveness in individual contests by focusing on factors such as candidate experience and funding (e.g., Berry and Canon 1993, Jacobson 2006, Francis and Kenny 2000). In our pursuit of institutional and structural factors that affect competitiveness, rather than individual characteristics of competitors, we follow Taagepera and Shugart (1989) and Taagepera (1999, 2007), among others.

[3] Our work on the Senate can be thought of as complementary to the body of work inspired by Mayhew (1974), referred to as the 'vanishing marginals' literature, that is concerned with trends in the competitiveness of contests for the US House of Representatives. For example, Abramowitz et al. (2006) support the finding that redistricting is not the primary villain in reducing political competition in the US House, but argue that increasing polarization has led to a larger number of non-competitive seats. Jacobson (2006) reviews work seeking to account for the decline of competition in the House. Merrill, Grofman and Brunell (forthcoming) is conceptually related to our explanatory conundrum; they ask, how, with no change in electoral rules, levels of mean party polarization in the U.S. House can dramatically vary over time. See also the discussion of the importance of constraints on candidate locations in Grofman (1987).

[4] In virtually all models of party formation, when voters differ ideologically, parties form in a way that separates them along ideological lines. See, for example, Aldrich (1983), Gomberg et al. (2004), Moon (2004), Poutvaara (2003), and Snyder and Ting (2002).

[5] The 17th Amendment to the Constitution providing for direct election of Senators was approved in 1913, and elections were phased in over the next several years. By 1922, all elections to the Senate were direct.

[6] We note that averaging over time is essential in the present context because a big win in any one election does not establish a systematic pattern of deviation from a regime of close contests. (Buchler (2009) has argued that a big win from time to time may be required to incentivize political parties in a democratic system.) A Methodological Appendix, available on Stanley Winer's website: www.carleton.ca/~winers, contains the rationale for averaging over *12-year periods* and the robustness of our results to alternative periodization strategies.

[7] Later we disaggregate data by region as well as by time period. Inspection of the data on which Table 1 is based shows that variation in competitiveness occurs across states within a given time period as well as over time.

[8] While changes in the sizes of state populations (Hibbing and Brandes 1983) might be a candidate for such a theory, it cannot account for the types of variation we observe in the Table 1 data. Another explanatory candidate is political realignment. Below and in the on-line Appendix we consider how to take realignment related effects into account; this does not affect our conclusions.

[9] In contrast with a too simple reading of Downs (1957), in two-party plurality competition convergence of candidates to the median in the constituency should not be expected. Rather, for a plethora of reasons (see e.g., Calvert and Isaac 1981, Palfrey 1984, 1989, Poole and Rosenthal 1984, Wuffle et al. 1989, Grofman, Griffin and Glazer 1990, Coughlin 1992, Ansolabehere et al. 2001, Grofman 2004, Adams et al. 2005, Callander 2005, Schofield and Sened 2006, and Hussey and Zaller 2011), we should expect to see candidates located somewhere between their national party median and the constituency median. It is useful to recall that Downs himself (1957: 98) saw problems with convergence as an electoral strategy: "Citizens see little point in voting if all choices are identical, so differences between platforms must be created to entice voters to the polls."

[10] On this point see, for example, Jacobsen (2006) and Masket (2009). On the particular importance of out-of-state campaign financing, the need for which constrains local candidates, see Sorauf (1992) and Marshall (1998). For data concerning out-of-state financing from 2000 to 2010, see www.opensecrets.org.

[11] In recent elections, newspaper articles have associated this sort of constraint on the policy location of Republican candidates with the rise of the "Tea Party," and the subsequent loss of some moderate Republicans to primary challenges.

[12] Callander (2005), for example, explores a setting in which national parties compete simultaneously for multiple districts of heterogeneous voters. In his national party model, the party selects the platform that will be espoused by all of its candidates in every district. In this case, he shows that the national parties select different platforms in equilibrium.

[13] For example, in the 109th Congress, in the US House of Representatives DW-Nominate range is about 2. If we look only at the 235 Republicans, DW-nominate scores ranged from 0.136 to 1.0281, with a mean of 0.518 and a standard deviation of 0.167.

[14] Conceptual models that predict this stylized fact are, however, hard to find in the existing literature. One exception is recent work by Polborn (2014).

[15] This prediction has received some empirical support. See for example, Gerber and Morton (1998) and others cited below.

[16] Empirically we have seen that divergence is established by the DW-Nominate data. Theoretically, one can look at models by Coleman (1971, 1972),Aranson and Ordeshook (1972) and many others since.

[17] We take the Palfrey model only as illustrative of models predicting divergence and we are, for present purposes, agnostic about the exact causes of candidate divergence. Concerning the Palfrey model, see also Greenberg and Shepsle (1987), Palfrey (1989), and Osborne (1993).

[18] Complexities caused by competition over multiple dimensions are beyond the scope of this paper.

[19] Cf. Esiasson (1999). To escape the constraint, the local candidate may substitute personal funds for party funds, or rely on a cult of personality. In the first case, we should expect that candidates facing a relatively hostile national party will tend to self-finance to a greater extent, and in the extreme we may see independent, largely self-financed candidates such as Ross Perot. Testing these predictions is left for future research.

[20] Cf. Carsey and Harden (2010) and Harden and Carsey (2012).

[21] We could consider an increase in the dispersion of voters in selected states where the constraint is binding, with analogous qualitative consequences.

[22] In Callander's National Party-type model, heterogeneity of the electorate is a key determinant of national party platform divergence and of the number of parties in equilibrium. But he is not concerned with explaining variation in the competitiveness of local elections illustrated in Table 1. Froman (1963), Bond (1983) and Koetzle (1998) examine the impact of the heterogeneity on competition empirically, but the evidence in this literature is, on our reading, inconsistent.

[23] Effects of changes in *within-party heterogeneity* should be distinguished from effects of a change in *between-party* caucus polarization, even though the two are empirically correlated. If between-party caucus polarization reflects generally the degree of polarization in, or dispersion of, preferences in local electorates represented by d in the simple model, the result of that development can be predicted using the Mixed Influence Model: a decrease (increase) in *between-party* caucus polarization will result in fewer (more) highly competitive races, because existing party-specific constraints are then binding in more (fewer) places.

[24] We assume that in open primaries there is no strategic voting in which Republicans, for example, vote for the Democratic candidate who would be the weakest candidate in the general election.

[25] Snyder and Ting (2011: 783) assert: "[with] primaries, all but the most moderate constituencies are dominated by one party."

[26] See www.carleton.ca/~winers and the website of this journal **(CHECK)**

[27] Our use of 12-year terms is defended in the on-line Appendix. We recall that averaging is also essential because a big win or loss in any one election does not signal systematic variation in competitiveness.

[28] For example, in the 2004 presidential election, Massachusetts had the smallest share of votes cast for G. W. Bush (0.37) and was coded as 0.02 (=1/50). Utah cast the largest share of votes for Bush (0.73) and was coded as 1(=50/50). Using a rank relative to the number of states included in that election's returns also allows us to control for omission of observations due to third party success and to control for a gain of observations because of the entry of Alaska and Hawaii into the union in 1959.

[29] On the empirical importance of homogeneity in the party caucus for party cohesion and strength in Congress and its implications for public expenditure, see Winer et al. (2008).

[30] In 1954-1955, the wording was "voters receive ballots of [one party] or [both parties]."

[31] The same caveat applies, of course, to Republican candidates in very liberal states.

[32] To construct the open seat sample, election races with incumbents are excluded from the raw data, and the 12-year averages are then recomputed.

[33] The procedure of choosing break points that minimize a mean squared error is similar to that used in maximum likelihood estimation.

[34] The literature on primaries and platform selection is complex, as one of the reviewers has stressed. For example, Kanthak and Morton (2001) argue that this relationship is non-linear. Furthermore, open primaries may lead more than two candidates to enter the primary, making it difficult to assess the impact on platform selection, and thus on competition. The theoretical ambiguity in the effect of open primaries on political competition certainly may a role in accounting for the relatively weak empirical support for open primaries having some effect on political competition. See also Snyder and Ting (2011).

[35] The large national media surveys done by Gallop, CBS/NY Times, and so on are less desirable for measuring a state's variance in voter ideology because they don't extend back very far and rely on a crude three-category (conservative, moderate, liberal) measure of voter preferences. Robert Erikson, in an October 1, 2009 email, laments that with these data "opinion heterogeneity is very difficult to impossible to measure." We note also that there are other survey measures of state level ideology used, for example, in Harden and Carsey (2012) in work that also points to the importance of heterogeneity of local electorates, though it is not concerned with explaining competitiveness. But these surveys are available for only a few, more recent years. Here see also Ensley (2012: 43-44).

[36] And we earlier noted that a further reason for constraints on local candidates is that swing voters, exposed to messages from the national party, may not believe that a Republican candidate, for example, is as liberal as he or she claims to be.

[37] We note that Gerber and Lewis (2004) have explored the role of heterogeneity in voter preferences. They find that the influence of a district's median ideology on the voting record of the district's elected officials is greater in homogeneous (low variance of voter preferences) districts than in heterogeneous ones. This result is difficult to interpret because the regression also contains a variable for party ideology that is appropriate in a divergent platform regression but not in one based on the median voter model.