

Are Politicians Accountable to Voters? Evidence from U.S. House Roll Call Voting Records *

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Abstract

To what extent is the median voter theorem *empirically relevant* for the political economy of the United States? We assess the empirical relevance of the median voter theorem – and quantify any departures from the theory's predictions – in the context of roll call voting patterns among members of the U.S. House of Representatives. We exploit a regression discontinuity design inherent in the electoral system in order to account for unobservable voter preferences and omitted determinants of politicians' behavior. Our empirical results reject the most extreme form of the median voter theorem, and a surprising fact emerges: there is virtually no correlation between the liberalness of a Representative's voting record and the Democratic vote share. The evidence on roll call votes is neither consistent with *strong* nor *weak accountability*, suggesting that evidence of politician accountability would more likely be found in analyses of different aspects of politicians' actions.

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1 Introduction

To what extent do elected leaders in the United States represent their constituents' policy preferences? An important prediction of virtually every economic theory of political competition in a representative democracy is that elected officials of government are somewhat constrained by the will of the electorate. The most well-known result is that of the median voter theorem, in which opposing politicians moderate their policy "positions" to win votes, so that in equilibrium, the policy outcome reflects the choice of the "median voter". Indeed, it is difficult to overestimate the role of the median voter theorem in economic analysis.¹ But to what extent is the median voter theorem *empirically relevant* for the political economy of the United States? Even if the political market is not strictly "perfectly competitive", are politicians at least *somewhat* responsive to voters' preferences?

Providing credible answers to these empirical questions is not a straightforward exercise. This is because any attempt to empirically assess the accountability of politicians must confront at least two fundamental problems. First, there is no natural or obvious way to quantify and measure "voters' preferences". It is unclear how to assess the validity of an arbitrarily chosen metric for preferences. It is even less clear how the incompleteness of any such proxy may affect inferences about the relationship between voters' preferences and politicians' actions. Second, politicians' actions – such as legislative voting patterns – are probably determined through a complex process, driven by a multitude of unmeasured (and unmeasurable) social, economic, and political factors. There is no reason to believe that these (unobserved) factors would be uncorrelated with voter preferences, even if preferences were considered exogenous. These two problems imply that any correlation (or lack thereof) between legislators' voting records and *proxies* for voters' preferences will have a somewhat ambiguous interpretation.

In this paper, we assess the empirical relevance of the median voter theorem – and quantify any departures from the theory's predictions – in the context of roll call voting patterns among members of the

¹ The median voter theorem has recently been used to model policy making on issues as diverse as taxation, school vouchers, expenditures for local public goods, monetary policy, unemployment insurance, regulation of monopolies, trade policy, highway expenditures, smoking bans, abortion, privatization in Eastern Europe, Social Security, suburban annexation decision in large U.S. cities, and collective bargaining agreement in the National Basketball Association, just to name a few.

U.S. House of Representatives. We employ two strategies to address the above two identification problems. First, we provide a test of “perfect competition” among opposing House candidates without directly specifying a measure of “voter preferences”. We do this by comparing the roll call voting records between Republican and Democratic representatives in Congressional districts whose most recent electoral races were decided by extremely *close* margins. Voters in districts that were easily won by Democratic candidates could be expected to be, on average, more “liberal” than voters in districts easily won by Republicans. By contrast, voters in districts that were *barely* won by Democrats are likely to be quite similar *ex ante* to those in districts that were *barely* won by Republicans. They will be similar along *all* pre-determined (relative to the point of the election) characteristics – including in their political preferences – as long as the research design proposed here is a valid regression discontinuity design.² We argue that the regression discontinuity design is appropriate in this case, and present evidence that supports this presumption.

Second, we do not attempt to make inferences from correlations between proxies for voter preferences and legislators’ voting patterns. Instead, in order to examine whether or not politicians are *partially* constrained by voters’ preferences, we consider alternative observable implications for legislators’ behavior under political competition. In particular, we show that even if the “perfect competition” notion of the median voter theorem does not strictly hold true, politicians’ actions can still be largely determined by the preferences of the electorate. Within the theoretical framework we consider, politicians will alter their positions in response to an exogenous shift in the probability that they will be elected. Thus, we examine the degree to which Democrat and Republican *incumbents’* positions diverge among those who *barely* became incumbents (i.e. barely won elections). Lee (2001) estimates that among close elections incumbency has a significant causal effect on the probability of re-election. We consider whether or not there is a corresponding excess divergence between the Democrat and Republican incumbents’ positions, as predicted by the model of political competition we discuss below.

Our findings can be summarized as follows. First, we examine the empirical relation between a

² Other examples of applications of the regression discontinuity design to secret ballot elections include Lee [2000,2001], Pettersson-Lidbom [2001], and DiNardo and Lee [2001].

Representative's liberal voting score measure and the vote share for the Democratic (or, equivalently Republican) candidate in the most recent electoral race. The analysis reveals a striking discontinuity precisely at the 50% threshold. Democrats who *barely* won (just over 50 percent of the votes) exhibit a drastically more liberal voting record – as measured by the Americans for Democratic Action (ADA) voting score – compared to Republicans who *barely* won their districts. Since these marginal districts are likely to represent, on average, voters with similar preferences, the discontinuity strongly rejects the stark “perfect competition” notion of the median voter theorem.³ The evidence also confirms the importance of a “party effect”, as suggested by the findings of Levitt (1996) and other studies in political science (e.g. Snyder and Groseclose, 2000; Poole and Rosenthal, 1984).⁴

Second, we document a surprising fact: there is *virtually no empirical association between the ADA score and the actual Democratic vote share, conditional on which party holds the district seat*. In other words, on average, Democrats (Republicans) who just barely won their seats exhibit as liberal a voting record as fellow Democrats (fellow Republicans) who won their seats in land-slides. This finding stands out against the background of a broad agreement of the existing literature that finds that proxies for the “liberalness” of voters are correlated with the liberalness of Representatives’ voting records.⁵

Third, the ADA measure is not the only interest group score that exhibits the striking discontinuity *and* the flat relation between voting scores and election vote shares. In fact these two features are consistently found in our examination of a number of voting scores from interest groups, which include, for example, the Chamber of Commerce, the AFL-CIO, the League of Conservation Voters, and the League of Women Voters.

³ Our finding thus stands in contrast with numerous studies that argue that the evidence strongly supports the median voter theorem. A survey of the economic literature in Turnbull and Mitias (1999) concludes that “thus far the empirical evidence yields surprisingly strong support for the median voter demand aggregation model”. Examples include but are not limited to Ahmed and Greene (2000), Turnbull and Djoundourian (1994), Wyckoff (1988), Turnbull (1995), Pommerehne and Frey (1976), Pommerehne (1978), Holcombe (1980), Inman (1978), Deno and Mehay (1987), McEachern (1978). Examples of studies that focuses on roll-call votes in Congress are Kau and Rubin (1979), Kau et al. (1982), Kalt (1981), Peltzman and Kalt (1984), Bender (1994).

⁴ Snyder and Groseclose (2000) conclude that “virtually all studies of roll-call voting in the United States Congress in the political science literature find that political party affiliation is one of the best predictors of voting behavior”. The literature is too large to be summarized here. Examples include, but are not limited to, Poole and Rosenthal (1984, 1996), Snyder and Ting (2001a), Snyder and Ting (2001b), Lott and Davis (1992), Canes-Wrone, Brady and Cogan (2000), Krehbiel (2000), Bender (1991), Lott (1990), McArthur and Marks (1988), Douglas and Sielberger (1987), McCarty, Poole and Rosenthal (2000).

⁵ See Snyder and Ting (2001) for a review of empirical regularities found in the literature.

Finally, we find that Democratic and Republican incumbents (that were initially barely elected) exhibit voting scores that do not differ substantially from that predicted by the “no accountability” case in our model of politician behavior. There is little evidence that incumbents alter their positions in response to an exogenous shift (induced by incumbency) in the probability that they will be re-elected. Thus, our analysis suggests that the interest group score data is neither consistent with what we refer to as *strong accountability* (the “median voter theorem”) nor *weak accountability* (politicians partially responsive to voters’ preferences). We conclude that evidence of weak or strong accountability would more likely be found in analyses of specific policies (e.g. tax or expenditure policies), or perhaps their economic consequences.

The remainder of the paper is organized as follows. In the next section we review some empirical regularities found in the existing literature on, and then present our regression discontinuity analysis of the relation between voting scores and Congressional election returns. In Section 3 we present a fairly general theoretical framework in order to clarify what we refer to as *strong accountability* (the median voter theorem notion), *weak accountability*, and the conditions for *no accountability*. We derive testable implications of these three cases, and then present the corresponding empirical results. We discuss the limitations of our analysis in Section 4, and Section 5 concludes.

2 Regression Discontinuity Tests of Political Competition

2.1 Stylized Facts and Unresolved Issues

In order to provide a context for our analysis, we begin by highlighting some empirical regularities documented in the previous literature on roll call votes, and some limitations of the existing evidence.⁶ Next, we describe how our empirical strategy may help overcome some of the limitations that have affected previous studies. We then present reduced form estimates of the party effect. In the next Section, we turn to a more structural framework that is useful in interpreting some of the results presented here.

We first discuss the choice of the dependent variable. There are a variety of ways one can measure politician’s “behavior” in voting on legislation. A widely used measure is a voting score constructed by

⁶ A more detailed discussion of the existing literature is found in Section 4.

the liberal political organization, Americans for Democratic Action (ADA). For each Congress, the ADA chooses about 20 high-profile roll call votes, in order to construct an index that varies between 0 and 100 for each Representative of the House and member of the Senate. Higher scores correspond to a more “liberal” voting record. Throughout the paper, we focus on ADA scores, but we also present results for a number of different voting scores.

Contrary to what some casual observers of politics in the U.S. may believe, empirical researchers know that there is considerable variation in the ADA score *within* each party. This is illustrated in Figure 1, which provides the distribution of ADA scores for Democrat and Republican U.S. House of Representatives in the three most recent Congresses. To make the comparison across congresses possible, we follow the literature and use *real* ADA scores.⁷ The figure shows significant overlapping in ADA scores between the parties, and that it is not uncommon for Democrat representatives to vote more conservatively than Republican candidates, and vice versa.

In a recent review of empirical regularities in the roll call votes literature, Snyder and Ting (2001) begin by pointing out that “there is a strong, positive association between how liberal a representative’s roll call voting record is and how Democratic the representative’s district is”. It is hard to empirically measure “how Democratic the representative’s district is”, but previous studies have used a number of different proxies. For example, if one accepts the notion that ADA scores for Representatives are valid measures of constituents’ preferences (as in Levitt, 1996), one can examine the relation between average ADA scores of senators against the average ADA scores of House members for those states. The positive relationship is shown in the top left panel of Figure 2.⁸ Alternatively, other authors have used the Democrat vote share in *presidential* elections as a measure of the “liberalness” of the voters in the districts.⁹ The top right panel in Figure 3 plots the average ADA scores of House members against the democrat vote share in the closest presidential election.¹⁰

These pictures are suggestive that there is *some* degree to which members of the House represent

⁷ While nominal ADA scores are between 0 and 100, real ADA scores may be negative.

⁸ Each point in the figure is the average ADA score within intervals 1 ADA point wide.

⁹ For example Erikson and Wright, 1989, 1993, 1997; Brady et al., 1996; Canes-Wrone et al., 2000).

¹⁰ Each point is the average ADA score within intervals 0.1 wide. The figure is very similar to Figure 4 in Snyder and Ting (2001).

their district in voting on legislation. On the other hand, recent research has suggested that in spite of these regularities, “party affiliation is one of the best predictors of voting behavior” (Snyder and Groseclose, 2000). For example, a widely cited study by Snyder and Groseclose (2000) estimates the party effect using an innovative identification strategy based on lopsided votes.¹¹ They conclude that in the majority of cases, party affiliation is a significant determinant of roll calls. Levitt (1996) finds similar results. The party effect on roll call votes is shown in the two bottom panels of Figure 2. The bottom panels are similar to the top panels, but condition on party affiliation: crosses are for democrats and circles for republicans. The left panel suggests that holding constant ADA scores of the House delegations, Democrat senators have more liberal voting records than Republican senators. Similarly, the right panel indicates that holding constant the Democrat vote share in presidential elections, Democrat members of the House have more liberal voting records than Republican members of the House.¹² At the same time, based on evidence such as that presented in Figure 2, Snyder and Ting (2001) conclude that a second empirical regularity documented in the literature on roll calls is that “even within each party, there is a positive relationship between how liberal a representative’s roll call voting record is and how Democrat the district is”.

Thus, Figure 2 summarizes the prevailing wisdom in the literature is that both party affiliation and voters preferences appear to “matter”. However, measuring the relative weight of these two influences is not straightforward. In particular, a fundamental difficulty that arises in estimating this relative weight is that voters’ preferences are not observed. In addition, even if they were measurable (and assumed to be exogenous), unobservable determinants of politicians’ voting behavior that are correlated with preferences could easily confound the relation between voters’ “preferences” and politician’s actions. The arbitrariness of proxies for voter preferences has been noted in the literature. Levitt (1996), for example, acknowledges that “the voting record of any particular House member only loosely reflects district interests”. Few would argue that the inadequacy of an arbitrarily chosen proxy for preferences could potentially explain some of these empirical regularities. The unresolved question is *to what extent* could the regularities be artifacts of

¹¹ Their strategy depends on the assumption that on votes with 65 percent or more legislators on one side, legislators are not subject to party influence.

¹² This relationship has been clearly described in Snyder and Ting (2001).

these incomplete proxies.

In our analysis, rather than specifying a particular proxy for voter preferences, we instead rely on a regression discontinuity approach that compares the voting records of Democratic and Republican representatives that were elected by very close margins. We argue that voters in districts that were *barely* won by Democrats are likely to be quite similar *ex ante* to those in districts that were *barely* won by Republicans. If the core notion of the median voter theorem is true these Democrats and Republicans should exhibit similar voting scores. In this way, our analysis provides a strict test of the extreme form of political competition implied by the median voter theorem, *without specifying a proxy for preferences*. At the same time, the analysis explicitly allows for a “party affiliation effect”, which is likely to have a dominant role in determining voting records, as suggested by recent studies (Levitt, 1996; Snyder and Groseclose 2000).

2.2 Regression Discontinuity Results

We address the issues of unobserved voters’ preferences and other omitted variables by using a regression discontinuity analysis based on close elections. We compare the roll call behavior of representatives from districts where the vote share for the Democrat candidate is just below 50% with the roll call behavior of representatives from districts where the vote share for the Democrat candidate is just above 50%. Districts with democrat vote share just above and just below 50% have similar median voters, but representatives from different parties.¹³ Our identification strategy depends on the assumption that the voters’ preferences are a continuously distributed with respect to the vote share.

The top panel of Figure 3 plots ADA scores against the democrat vote share. Data are for years 1946 to 1994. Throughout the paper, the unit of observation is the district. Because there are too many observations to show in one figure, each point in Figure 3 is an average of the ADA score within intervals 0.001 wide. The vertical line marks 50% of the democrat vote share. Districts to the right of the vertical line are Democrat, districts to the left are Republican. The continuous line in Figure 3 is the predicted ADA

¹³ Lee (2000, 2001) discusses in greater detail the potential validity of using election returns data in a regression discontinuity analysis of analyzing the incumbency advantage.

scores from a regression that includes a 4th-order polynomial in vote share, separately for the sample of democrat and republican candidates. The figure reveals a striking relationship: average ADA scores appear to be a continuous and smooth function of vote shares everywhere, except at the threshold that determines party membership. There is a large discontinuous jump in ADA scores at the 50% threshold, indicating that representatives from districts with similar vote shares have very different roll call behavior depending on the party to which they belong.

Compare a district where the Democrat candidate barely lost (for example, vote share is 49%), with a district where the Democrat candidate barely won, (for example, vote share is 51%). If preferences are continuously distributed with respect to the vote share, and there is intense political competition between the two candidates, both attempting to capture a higher fraction of the vote, we would expect to observe little differences in roll call voting behavior around the 50% threshold. On the contrary, it seems that representatives from districts with almost identical vote shares have widely different roll call records. The difference at the 50% threshold appears quite large. From Figure 3 it seems that representatives from districts on the democrat side of the 50% threshold have ADA scores that are on average 50 points higher than representatives from districts on the republican side.

This difference is more precisely quantified in the top row of Table 1. Column 1 reports results from a naive regression where ADA is regressed on democrat vote share only. The naive regression suggests that representatives from districts where the democrat vote share is larger have a more liberal roll call record. A very different picture emerges in column 2, when we condition on party membership as well as on vote share. The coefficient of vote shares drops virtually to zero. Most of the difference in roll call voting records between districts with high and low democrat vote share comes through the coefficient on party. Consistent with the size of the jump shown in Figure 3, the party coefficient is around 50 ADA points.

If the linear specification is inadequate, the estimate of the party effect reported in column 2 may be biased. In the next 3 columns we identify the party effect by exploiting only variation in ADA scores for districts close to the threshold at 50%. Specifically, in column 3 of Table 1 we report the difference in ADA scores between democrat and republican districts, including only districts with democrat vote share between

45% and 55%. The estimated party effect based on this sample of close elections is 49.4. In column 4 we further restrict the sample to only districts with democrat vote share between 48% and 52%. The estimated party effect remains virtually unchanged from column 3. Finally, in column 5, we estimate a flexible parameterization of the function leading up to and after the threshold from left and right. Specifically, we regress ADA scores on a 4th-order polynomial in vote share, separately for the sample of democrat and republican candidates. The coefficient in column 5 is the predicted difference in ADA scores at 50%. Such predicted difference is 46.8, only slightly smaller than the estimated party effects in columns 2 to 4.

Figure 3 also documents a surprising fact: there is *virtually no empirical association between the ADA score and the actual Democratic vote share, conditional on which party holds the district seat*. Although one might expect that House members that are elected in safe Republican (Democrat) districts to have more conservative (liberal) records than those of members elected in swing districts, no correlation emerges from the figure. This finding stands out against the background of a broad agreement of the existing literature that finds that proxies for the “liberalness” of voters are correlated with the liberalness of Representatives’ voting records (Snyder and Ting, 2001). It may be tempting to infer from the figure that politicians are not accountable to voters. However, we are reluctant to base our inferences about the degree of political competition on this apparent lack of correlation. In particular, the theoretical development in Section 4 shows how this lack of correlation could be completely consistent with some degree of politician responsiveness to voters.

A key identifying presumption in this paper is that as one compares closer and closer elections, Republican and Democrat districts become more similar. We provide two pieces of evidence to support this assumption. First, in the bottom panel of Figure 3, we plot once-lagged ADA scores against the democrat vote share. Since lagged ADA scores are determined *before* the outcome of the election, then if the regression discontinuity design effectively “randomizes” who wins the election in close elections, we should observe no discontinuity in the relationship between lagged ADA scores and the vote share. If, on the contrary, the jump in the top panel is caused by some permanent (observed or unobserved) characteristics of districts that has nothing to do with the party effect, then we could expect to see a jump in the lower

panel. The lack of discontinuity lends some credibility to our identifying assumption. (The estimated gap and standard error are 3.5 and 5.6, respectively).

Second, we show that as we compare closer and closer elections, Republican and Democrat districts have similar characteristics along several other dimensions.¹⁴ Consider, for example, geographical location in the first row of Table 2. Column 1 indicates that there are sizable geographical differences in the full sample. Democrats are significantly more likely to be elected in the South than in the North and the West. However, as we start restricting the sample to closer and closer elections in columns 2 to 5, the geographical differences decrease. For elections that are only within two percentage points from the threshold (column 5), the differences are not statistically significant. The last column shows the predicted difference at exactly 50% from a model that includes a 4th-order polynomial in vote share (separately for the sample of Democrat and Republican candidates).

The rest of the table presents the average difference between Democrat and Republican districts in income, education, race, urban status, manufacturing jobs, total population, number of voters and percentage of eligible voters. In most cases, Republican and Democrat districts look similar when the sample is restricted to close elections.¹⁵ The relationship between some of districts characteristics and vote share is visually described in Figures 4 and 5. Overall, we conclude that in a close neighbor of 50% republican and democrat districts look similar, lending some credibility to our main identifying assumption.

The main advantage of using ADA scores is that it is a widely used index in the literature. For this reason, throughout the paper we use ADA scores as the preferred dependent variable. However, our results are not specific to the ADA score. Ratings from different interest groups yield remarkably similar results. This is demonstrated in Figures 6 to 9, which are based on ratings from several liberal and conservative interest groups, including the American Civil Liberties Union, the League of Women Voters, the League

¹⁴ Data on districts characteristics in each election year are from the last available Census of Population. Because the census takes place every ten years, standard errors allow for clustering at the district-decade level.

¹⁵ One exception is the percentage urban in the district, that is marginally significant in column 5, although not significant in column 6, indicating that democrat districts are slightly more likely to be urban. A second exception is the difference in the percentage blacks, which is statistically significant in column 6, although not in columns 4 and 5. This is due to few outliers in the outer part of the vote share range. When the polynomial model is estimated including only districts with vote share between 25% and 75%, the coefficients drops to -0.003 (0.010), similar to the coefficient in columns 4 and 5.

of Conservation Voters, the American Federation of Government Employees, the American Federation of State, County, Municipal Employees, the American Federation of Teachers, the AFL-CIO Building and Construction, the United Auto Workers, the Conservative Coalition, the US Chamber of Commerce, the American Conservative Union, the Christian Voters Victory Fund, the Christian Voice, Lower Federal Spending, and Taxation with Representation.¹⁶ In all cases, the relationship between roll call ratings and democrat vote share is qualitatively similar to the one uncovered for ADA scores. All figures show a well behaved, smooth function with a jump at 50%. As expected, the jump is upward for liberal groups, and downward for conservative groups. Rows 2 to 16 of Table 1 and 2 quantify the discontinuity. The estimated party effects ranges from 28 to 57 points, and is statistically significant from zero in all cases. The coefficient on vote share is in many cases not different from zero, and in some cases it is even negative.

3 Analysis of Political Competition: Strong, Weak, and No Accountability

The empirical analysis so far indicates that (1) there is a large causal effect of party affiliation on a Congressional District's representation, as measured by voting records and (2) there seems to be little or no association between how liberal a Representative's roll call voting record and the Democratic vote share for the district, conditional on the which party holds the seat. A simplistic interpretation of these findings is that the evidence not only rejects the principal prediction of the median voter theorem, but also suggests that politicians are not responsive at all to constituents' preferences.

We believe that our analysis does strictly reject the "perfect competition" notion of the median voter theorem. However, we also believe that it would be pre-mature to conclude from our analysis, and other tests of the median voter theorem (Poole and Rosenthal, 1984), that U.S. House Representatives do not respond at all to the preferences of their constituents. Also, the Democratic vote share is as arbitrary as any other proxy for voter preferences, and hence its correlation (even conditional on party affiliation) with voting scores is still difficult to interpret.¹⁷

¹⁶ All the ratings range from 0 to 100. We have re-scaled the ratings so that low ratings correspond to conservative roll call votes, and high ratings correspond to liberal roll call votes.

¹⁷ We do not utilize the Democratic vote share as a proxy for voter preferences. We use it simply because it generates a disconti-

In order to quantify the degree to which politicians are constrained by voters' preferences, we find it helpful to develop a general theoretical framework for organizing notions of politicians' optimizing behavior, and the resulting "market" equilibria that can occur. Thus, in this section, we present an intuitive model of politician behavior in order to 1) provide an economic framework for interpreting our empirical findings thus far; 2) characterize different degrees of politician accountability as different equilibria; and 3) motivate an empirical test to differentiate between these degrees of accountability. In the model, candidates strategically compete, trading off their probability of obtaining elected office with the costs of deviating from their national party's line.

In our theoretical development, we emphasize that the "median voter theorem" corresponds to the polar case where politicians' positions are strictly determined by voters preferences, with the party affiliation having no impact. In the opposite case, party affiliation plays the sole role in determining politicians' voting behavior. Finally, there is an intermediate case where politicians, acting in self-interest, strike a balance between the preferences of voters, and their national party's platform. The model suggests a simple empirical test to distinguish between the three equilibria.

In our theoretical development, our goal is not to generate a new theory of political competition. Rather, we seek to outline an intuitive, and empirically tractable model that formalizes some basic notions that seem common to many economic models of politician behavior such as the role of party influence, optimizing behavior on the part of the politician, and strategic positioning of opposing candidates to gain votes, and the resulting implicit constraints imposed by the electorate.

3.1 Theoretical Framework

In our two-party framework, within a Congressional district, opposing political candidates choose a "platform" – which we assume they carry out, in equilibrium – so as to strike an optimal balance between two factors. On the one hand, the closer are their own positions on issues to the national "platform" the greater is the benefit to the politician – provided they are elected to office. On the other hand, by choosing a platform that is closer to the party-line, and farther away from the "median voter", the candidate faces a smaller

nuity design in party affiliation.

chance of being elected to office. In equilibrium, each candidate maximizes expected utility conditional on his opponent’s platform choice.

Constraints and Objectives Assume that in any given election, there is a national “party platform” for both the Republican and Democratic parties, and denote those platforms as scalar constants R and D , with $R > D$, respectively (where a higher value is considered “more conservative”). In any particular Congressional district, the Republican and Democratic candidates choose their own individual platforms (measured on the same scale), r and d , respectively. Both candidates are limited to choosing a position such that $r > d$. The Republican candidate chooses r to maximize expected utility

$$EU = \Pr \left(V^R > \frac{1}{2} \right) U_R(r, R) + \left(1 - \Pr \left(V^R > \frac{1}{2} \right) \right) A_0 \quad (1)$$

where V^R is the eventual share of votes won by the Republican, so that $\Pr \left(V^R > \frac{1}{2} \right)$ is simply the probability that the Republican candidate will win the election; $U_R(r, R)$ is the utility that is obtained if the Republican wins the election, having announced – and carried out – platform r , given the national party platform is R . A_0 is the utility gained if the Republican loses the election.¹⁸

The first key assumption of the model is that $\frac{\partial^2 U_R(r, R)}{\partial r^2} < 0$, and that $\frac{\partial U_R(R, R)}{\partial r} = 0$, so that the Republican candidate faces an implicit penalty for deviating from the “party platform”, and that penalty rises at an increasing rate with the degree of departure from the party-line R . For simplicity, party line is exogenous in this model. The enforcement of party discipline may take the form of rewards and punishments that are tied to a member’s votes. Rewards may include favorable committee assignments and leadership positions, campaign funds, district visits by party notables, federal projects targeted to a member’s district, expedite treatment for a member’s favorite bills. Punishments may include dismissal from key committees, roadblocks placed in front of a member’s bills, relocation of federal funds away from a member’s district, a decrease in “political capital” among members of the party.

In the literature, there are many different theories that rationalize party discipline. Modeling why parties enforce discipline is behind the scope of this paper, since we are interested in the consequences, not

¹⁸ We will focus on the range of possible r such that $U_R(r, R) > A_0$. If this is not true, then the candidate has no interest in running for election.

the reasons of party discipline. In order to keep our framework simple, we simply assume that parties do reward and punish members for their roll call votes, and refer the reader to Section 4, where we review the literature on this subject. Note that an alternative interpretation of our assumption is that legislators have ideological preferences over policy, and that these preferences are common among members of a party. In this case R represents the ideology of republican legislators, and deviations of r from R are costly because they imply that a legislator is running on a platform different from her personal ideology.¹⁹

The voting behavior of the electorate depends on voters preferences, the candidates' platforms, and candidates' characteristics, including campaign funds, charisma, seniority, etc:

$$V^R = G(\beta_0 + \beta_1 c - \beta_2 r - \beta_3 d + \beta_4 \Delta X + \varepsilon) \quad (2)$$

where c (measured on the same scale as r, d , etc.) is the position of the “median voter”, ΔX represents the difference between the candidates other attractive attributes (Republican's minus Democrat's), ε is a mean-zero random component of the voting behavior which cannot be forecasted by the candidates, and G is a well defined cumulative distribution function that translates the voting propensity of the district to a vote share value between 0 and 1. We assume that $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4 > 0$. Note that $\Pr(V^R > \frac{1}{2})$ in equation 1 is equal to $F(\beta_0 + \beta_1 c - \beta_2 r - \beta_3 d + \beta_4 \Delta X - G^{-1}(\frac{1}{2}))$, where $F(\cdot)$ is the cumulative distribution function associated with $-\varepsilon$.

Our discussion focuses on the politician's decision, and not the individual voter's decision. For example, we leave completely unresolved the issue of why individual citizens even vote at all, given that there is essentially a zero chance that they will influence the outcome of the election. However, we believe the “vote production function” described by Equation 2 captures reasonable notions of how aggregate voting behavior may be influenced by politicians actions. For example, we would like to capture the following notion that the Republican is likely to receive more of the vote as the median voter's position is more conservative ($\beta_1 > c$). Also, it is reasonable to presume that given $r > d$, each can raise their expected vote share by moving her proposed platform closer to the “center” ($\beta_2, \beta_3 > 0$). We further conjecture

¹⁹ In this simplified framework, there are two reasons for why R is common among party members: self-selection into the party, or active selection of party members by the party leadership.

that there are other circumstances that are *not* related to political issues or platforms that are specific to the candidates that are running against one another, and might influence the resulting vote share and outcome of the election. For example, $\Delta X > 0$ could represent that relative to the Democrat, the Republican candidate is more “charismatic” a politician, or that he commands greater financial or non-financial resources for his campaign, or that the Republican has the advantage because he is the incumbent, and enjoys all of the electoral advantages associated with holding office in the district.

There are two assumptions about aggregate voting behavior that are crucial for the interesting Nash equilibria described below. First, the voters are following a “prospective-voting” rule. That is, voters are voting based on their anticipation of how the politician will vote on legislation once in office. The politicians thus affect their probability of being elected by influencing voters’ expectations. We assume a rational expectations equilibrium where the voters’ expectations about how politicians will vote if elected turn out to be, on average, correct. We are essentially assuming that there are ways in which the politician is able to credibly commit to platforms announced prior to the election.²⁰

The second crucial assumption in our framework is that there is *some* element of unpredictability to the actual vote share and electoral outcome, as captured by the random error term ε . We believe that the notion that the official vote tally are perfectly forecastable prior to the election – especially among “close elections”, upon which our analysis focuses – is simply implausible.

Candidates’ Maximization Problem At the Republican’s optimal r , the following first order condition holds for an interior solution:

$$\frac{\frac{\partial U_R(r,R)}{\partial r}}{U_R(r,R) - A_0} = \beta_2 \frac{f(\beta_0 + \beta_1 c - \beta_2 r - \beta_3 d + \beta_4 \Delta X - G^{-1}(\frac{1}{2}))}{F(\beta_0 + \beta_1 c - \beta_2 r - \beta_3 d + \beta_4 \Delta X - G^{-1}(\frac{1}{2}))} \quad (3)$$

where $f(\cdot)$ is the probability density corresponding $F(\cdot)$. The left-hand side of this equation is the Republican’s marginal (proportional) net benefit to moving his position to be more conservative, while the right-hand side is the corresponding marginal (proportional) cost (in terms of the probability of being elected).

This is illustrated in Figure 11, where $\frac{\frac{\partial U_R(r,R)}{\partial r}}{U_R(r,R) - A_0}$ is graphed as a function of r , conditional on

²⁰ If such credible commitment is not possible, then it seems that individual positions r and d are irrelevant with respect to aggregate voting behavior (i.e. $\beta_2, \beta_3 = 0$). The equilibrium that results in this case will be illustrated below.

given $c, d, \Delta X$, and A_0 as the curve MB, which will be downward sloping, due to the assumed concavity of $U_R(r, R)$.²¹ Curve A graphs the right-hand side as a function of r , keeping all other variables fixed. This represents the marginal (proportional) cost (in terms of probability) that the Republican faces by moving his position to the right; it will be increasing in r for any probability distribution with an increasing hazard.²²

Figure 11 demonstrates three points. First, as long as increasing r leads to fewer votes ($\beta_2 > 0$), the politician will choose a position r that is more liberal than the party line R . She will never choose a point beyond R , since such an action will lower *both* the probability of being elected, and the payoff to the candidate even if she is elected. Second, if $\beta_2 = 0$, the candidate will set $r = R$; for example, this would be the case if candidates' positions have no influence on how voters behave, or if candidates are unable to credibly commit to a particular platform, rendering any promises to act meaningless. Third, when β_2 is large, the optimal r is close to the position of the Democratic opponent, d . In some cases, β_2 may be sufficiently large so that the optimal choice of r is equal to d . This "corner solution" is illustrated in Figure 11 where β_2 is large enough so that the marginal cost curve is configured like curve B. Since we have constrained r to be greater than d , the candidate chooses $r = d$ even though the first-order condition does not hold at that point.

Nash Equilibria with Strong Accountability Equation 3 implicitly defines a best-response function for the Republican $r(c, \Delta X, d, R)$, and a similar first-order condition defines an analogous best-response function for the Democrat $d(c, \Delta X, r, D)$. The two reaction functions $r(c, \Delta X, d, R)$ and $d(c, \Delta X, r, D)$ can be solved for the equilibrium actions $r^*(c, \Delta X, D, R)$ and $d^*(c, \Delta X, D, R)$. An example of how these reaction functions might be configured is shown in Figure 12. $r^A(d)$, the Republican's best-response function, is negative with respect to his opponent's position d , except when d is sufficiently "conservative", where the best response is to adopt the same position (this is reflected in the portion coincident with the 45

²¹ $\frac{\partial \left(\frac{\frac{\partial U_R(r, R)}{\partial r}}{U_R(r, R) - A_0} \right)}{\partial r} = \frac{\frac{\partial^2 U_R(r, R)}{\partial r^2} (U_R(r, R) - A_0) - \left(\frac{\partial U_R(r, R)}{\partial r} \right)^2}{(U_R(r, R) - A_0)^2}$. Therefore, if $U_R(r, R)$ is globally concave, and $U_R(r, R) > A_0$, $\frac{\partial U_R(r, R)}{\partial r} / (U_R(r, R) - A_0)$ will be downward sloping with respect to r .

²² For example, if $F(\cdot)$ is the normal cdf, the function will be increasing in r , all other variables fixed.

degree line). In the appendix, we show that under the assumptions we have made thus far: 1) both reaction functions (apart from the 45 degree line) are negatively sloped, and 2) the Republican's reaction function is "steeper" than that of the Democrat, implying a "stable" Nash Equilibrium.

Figure 12 illustrates that as "vote production" becomes less sensitive to politicians' actions (as β_2 or β_3 falls in magnitude), each candidate will find it optimal to choose a position closer to their respective party lines (D and R), all other things (including their opponents' choice) equal. This is illustrated by the shift in the reaction functions to $r^B(d)$ and $d^B(r)$ and the resulting equilibrium is one where the Republican and Democrat are closer to their respective parties. If $\beta_2 = \beta_3 = 0$, we obtain one extreme where the equilibrium is at point C , where $r = R$ and $d = D$. This is a case where politicians are *not* accountable to their constituents; elected officials ultimate behavior in voting on legislation is independent of the voters' preferences.

The opposite extreme is where voters decisions are heavily influenced by politicians' actions (large values of β_2 and β_3). In this case, the equilibrium can be expected to lie somewhere on the 45 degree line. Political competition for votes compels the two candidates to adopt and identical positions.²³ We call this situation one in which politicians are *strongly accountable* to their constituents.

Nash Equilibria with Weak Accountability The special case of "strong accountability" is meant to illustrate the essence of the "median voter" theorem that competition for votes compels opposing politicians to "faithfully" represent their constituents, to the point that they adopt identical positions. The evidence we have thus far presented seems to strongly reject this hypothesis. However, we argue that a rejection of the "median voter theorem" need not imply that politicians are not at all *accountable* to voters.

We thus find it useful to define the concept of *weak accountability*. We call politicians *weakly accountable* if their positions are, *at least to some degree*, determined by the preferences of their constituents. For example, under weak accountability, the representatives of more conservative districts will exhibit a

²³ Exactly where on the 45 degree line the equilibrium lies is indeterminate in our model, and that indeterminacy could be resolved by allowing $r < d$; however we focus our analysis on an interior solution as well as the other extreme (complete loyalty to the party), primarily because our empirical analysis thus far indicates Republicans and Democrats vote quite differently, even when they represent, on average, districts with the same characteristics and partisan make-up.

more conservative roll call voting record compared to representatives of districts whose voters are more liberal – all other things equal. Thus, politicians can be weakly accountable to voters, even if candidates of opposing parties are not compelled to adopt identical positions, as implied by the median voter theorem.

This case is illustrated in Figure 13, where we consider opposing candidates from two districts, A and B . The median voter in congressional district B is relatively more conservative than that in district A , which implies that, all else equal, the Republican in B will have a higher probability of winning in his electoral contest. This will imply that the Republican in B , given the same position, will face a lower marginal cost to moving his position more to the “right”. The Democrat in B faces a higher marginal cost to moving “right”, due to the lower probability of prevailing in his electoral contest, compared to the Democrat in A . Thus, the “best-response” functions for both the Republican and Democratic candidates in B are shifted to the right compared to the candidates in A , resulting in a Nash Equilibrium such that the adopted platforms for both candidates in B are more conservative than those in A . In the appendix we show more generally that the equilibrium actions are such that $\frac{\partial r^*(c, \Delta X, D, R)}{\partial c}$ and $\frac{\partial d^*(c, \Delta X, D, R)}{\partial c} > 0$.

3.2 Observable Implications

Interpretation of the discontinuity jump Our theoretical framework makes it clear that the empirical evidence we have presented thus far strongly casts doubt on the “strong accountability” hypothesis. Under strong accountability, $r^* = d^*$. It is impossible to test the hypothesis for a specific district (since we can only observe either r^* or d^* at a given point in time), but we could test the hypothesis in an “average sense”.

To see this, consider linear approximations to the functions $r^*(c, \Delta X, D, R)$ and $d^*(c, \Delta X, D, R)$ with linear functions of c and ΔX . This will lead to the following relation:

$$P = \pi_0 + \pi_1 REP + \pi_2 c + \pi_3 \Delta X + u \quad (4)$$

where P is the voting record of the candidate who eventually wins the seat in the House, REP is the indicator variable that equals 1 if the officeholder is Republican, 0 if Democrat.²⁴ We add an error term u to

²⁴ More specifically, using the linear approximations $r^*(c, \Delta X, D, R) = \rho_0 + \delta_1 c + \delta_2 \Delta X$ and $d^*(c, \Delta X, D, R) = \delta_0 + \delta_1 c + \delta_2 \Delta X$, then $\pi_0 = \delta_0$, $\pi_1 = \rho_0 - \delta_0$, $\pi_2 = \delta_1$, $\pi_3 = \delta_2$. To aid in the exposition, we will continue to consider the simple case where the coefficients on c and ΔX are the same for the Republican and Democratic equilibrium actions. While this is true under strong accountability, in the more general case, they can differ.

reflect any deviation from the realized voting record of the politician from that which was anticipated. We adopt a “rational expectations” perspective, implying that u is independent of the information known at the time of the election (c , and ΔX , the parameters of the model). Under strong accountability, $\pi_1 = 0$. That is, conditional on the preferences of the voters c and other differences in the candidates ΔX , there should be no systematic difference between the Republican and Democratic Representatives’ voting patterns.

The problem is that the researcher cannot observe c or ΔX . This implies that the simple difference $E[P|REP = 1] - E[P|REP = 0]$ will not, in general, represent π_1 . This is because REP itself is partially determined by c and ΔX . That is,

$$REP = \begin{cases} 1 & \text{if } V^{R*} > \frac{1}{2} \\ 0 & \text{if } V^{R*} < \frac{1}{2} \end{cases} \quad (5)$$

$$V^{R*} = G(\beta_0^* + \beta_1^*c + \beta_4^*\Delta X + \varepsilon)$$

where V^{R*} is the equilibrium vote share that was gained by the Republican in the election. The second equation follows directly from the definition of the vote “production function”, substituting in the linear approximations for r^* and d^* , which are functions of c and ΔX themselves.²⁵ Intuitively, it is easy to see that voters’ preferences and candidate qualities influence the candidates’ equilibrium actions. But they also determine the equilibrium vote share, and hence which party’s candidate is eventually elected and whose voting record we eventually observe. This leads to straightforward selection bias problem.

However, this selection bias can be minimized by examining close elections, under mild continuity assumptions about the distribution of the unobservables. Among close elections

$$E\left[P|V^{R*} = \frac{1}{2} + e\right] - E\left[P|V^{R*} = \frac{1}{2} - e\right] \approx \pi_1 \quad (6)$$

for e “small” as long as c , ΔX , ε , and u are jointly continuously distributed.²⁶ Our estimates of the discontinuity jumps in Section 2 are estimates of π_1 . Our estimates of substantial voting record gaps at this threshold strongly rejects the strong accountability hypothesis.

Interpretation of the vote share- voting record relationship Our model of politician behavior

²⁵ Using the notation of the previous footnote $\beta_0^* = \beta_0 - \beta_2\rho_0 - \beta_3\delta_0$, $\beta_1^* = \beta_1 - \beta_2\delta_1 - \beta_3\delta_1$, and $\beta_4^* = \beta_4 - \beta_2\delta_2 - \beta_3\delta_2$.

²⁶ If c , ΔX , ε , and u are jointly continuously distributed, then V^{R*} , which is a continuous function of c , ΔX , and ε , will be continuously distributed with respect to c , ΔX , and u .

cautions against drawing strong inferences about the accountability of politicians from the observed relation between the vote shares for the candidates and the elected officials' voting record in Congress. In Section 2, we established that there is virtually no empirical relation between how “conservative” a representatives' voting record is and how conservative the electorate is, as measured by the eventual vote tally in the districts. Republicans who became representatives by a very narrow vote margin voted as “conservatively” on legislation as Republicans who became representatives by a landslide. Similarly, Democrats from “moderate” districts possessed voting records as partisan as Democrats who won their electoral races in landslide victories.

We believe these are important first-order facts to document. However, we also argue that they are not necessarily informative about whether politicians are *weakly accountable*. That is, within our theoretical framework, the figures presented in Section 2 simply depict the empirical relation between *equilibrium* vote shares V^{R*} and equilibrium actions r^* and d^* . They are not necessarily informative about the extent to which r^* and d^* will respond to changes in the position of the median voter c .

To see this, consider again Equation 4. The slope of the empirical relationship between the observed voting record and the vote shares, conditional on the party (as presented in Section 2), can be thought of as the slope in a regression of P on V^{R*} conditional on, for example, $REP = 0$. Such a regression slope requires the estimation of the covariance between $\pi_0 + \pi_2 c + \pi_3 \Delta X + u$ and $G(\beta_0^* + \beta_1^* c + \beta_4^* \Delta X + \varepsilon)$, *conditional on* $V^{R*} < \frac{1}{2}$.²⁷

Even abstracting from the nonlinearity induced by G , even if β_1^* and β_4^* were positive, the unconditional covariance could be positive or negative, depending on the relative magnitudes of the parameters and the variances of c and ΔX and the covariance between them. Furthermore, it is not clear whether the parameters β_1^* and β_4^* would be positive under general forms of the utility function, or under general distributions of ε . An added complication is that the observed covariance is *conditional on* $V^{R*} < \frac{1}{2}$, which may in principle differ from the unconditional covariance, depending on the joint distribution of c , ΔX , ε , and u .

²⁷ In the general case, using the notation of the previous footnote $\beta_0^* = \beta_0 - \beta_2 \rho_0 - \beta_3 \delta_0$, $\beta_1^* = \beta_1 - \beta_2 \rho_1 - \beta_3 \delta_1$, and $\beta_4^* = \beta_4 - \beta_2 \rho_2 - \beta_3 \delta_2$.

We therefore believe that any inference about the relevance of the “weak accountability” hypothesis from the empirical relationship between vote shares and voting records is likely to be highly sensitive to specific functional form assumptions about utility functions and/or the distribution of unobservable quantities.

There is an alternative to relying on specific functional forms for utility functions and distributions of unobservables. To the extent the linear approximation to the equilibrium action functions is adequate, there are important differing observable implications of both the *weak accountability* and the *no accountability* hypotheses.

Distinguishing between Weak Accountability and No Accountability The *weak accountability* and *no accountability* hypotheses have differing observable implications about how representatives should behave, if they belong to the incumbent party of a particular district. More specifically, in the *weak accountability* case, any exogenous factor that makes the Republican candidate more attractive compared to his Democratic opponent (for other, non-political reasons), will shift *both* candidates’ positions to be more conservative. For example, if a Republican gains another year of tenure as a Representative in the House, it may make him more attractive to voters than his Democratic opponent; as a result, that Republican can afford to lose some votes in moving closer to the national party line, and the opposing Democrat may be forced to deviate further from his party’s position.

By contrast, in the “no accountability” case, candidates do not face a trade-off between votes and their position relative to the party line. The representatives are at the “corner solutions” (point C in Figure 13). Thus, if a representative gained another year of tenure in office, this advantage would be of no consequence to the candidates’ positions, which are already optimally at the party line position.

These implications are illustrated in Figure 13. Consider two groups of electoral races, A and B . Preferences are on average the same between group A and B , but the difference is that the incumbents in group B are Republican, and those in group A are Democrat. If there is an electoral advantage to incumbency, perhaps due to voters’ preferences for more experienced politicians (see Lee [2001]), then the reaction functions $r^B(d)$ and $d^B(r)$ for group B will be shifted to the right compared to the reaction

functions for group A . Thus, on the whole, the eventual representatives of group B will vote more conservatively than those of group A . It was stated above that $\frac{\partial r^*(c, \Delta X, D, R)}{\partial c}$ and $\frac{\partial d^*(c, \Delta X, D, R)}{\partial c} > 0$; it is also the case that $\frac{\partial r^*(c, \Delta X, D, R)}{\partial \Delta X}$ and $\frac{\partial d^*(c, \Delta X, D, R)}{\partial \Delta X} > 0$, where ΔX might reflect, for example, the Republican's advantage over the Democrat in terms of political experience.

All other things equal, under *weak accountability*, candidates running in districts where the Republican is the incumbent should position themselves more conservatively compared to candidates in districts where the Democrat is the incumbent. By contrast, in the “no accountability” case – point C in Figure 13 – $\frac{\partial r^*(c, \Delta X, D, R)}{\partial \Delta X}$ and $\frac{\partial d^*(c, \Delta X, D, R)}{\partial \Delta X} = 0$. Since the candidates effectively face no real trade off between their positioning and votes, anything that affects votes (such as ΔX or c) should not affect their optimal choice of platform.

A naive approach to testing the “no accountability” hypothesis, then, would be to create two groups of elections based on which party's candidate was the incumbent – Republican or Democrat – and test for equality of the two groups' subsequent average voting scores for the representatives that ultimately won these elections. However, there are two problems with this test.

First, the *weak accountability* hypothesis predicts a divergence in the two groups' candidates' *positions*, but we only observe the actual voting scores for the candidates who are elected to office. Due to an incumbency advantage, the fraction of Republicans that are eventually elected to office is likely to be larger among the districts where the Republican was the incumbent than among those where the Democrat is the incumbent. Therefore, this difference in proportions, combined with general differences in positions between Republicans and Democrats, will generate a divergence in observed voting scores, even under *no accountability*. What is needed is a way to predict how much of a divergence in voting scores we would expect simply because one group will have a higher proportion of Republican representatives than the other.

Second, even though we expect the two groups to have different values of ΔX , it is quite possible that they also have different values of c . And under *weak accountability*, an incumbency advantage (shift in ΔX) may generate a divergence in the two groups' positions, but differences in voter preferences (a

shift in c) may completely *offset* that divergence.²⁸ Thus, as long as preferences are not kept constant, a finding that the two groups' positions are equal could be consistent with both the *weak* and *no accountability* hypotheses. What is needed is a way to keep preferences constant between the two groups of elections.

We propose an identification strategy that involves generating two groups of elections – those in which the Republicans *barely* became the incumbent party (by a narrow margin of victory in the previous election) and those in which the Democrats *barely* became the incumbent – and comparing the eventual representatives' voting scores between the two groups. We demonstrate the nature of the above two problems, and how our identification strategy addresses the problems.

Adding subscripts to denote time, it follows from Equation 4 that the mean difference of voting scores of representatives who won elections in Republican- and Democrat-incumbent districts can be expressed as

$$\begin{aligned}
& E [P_t | REP_{t-1} = 1] - E [P_t | REP_{t-1} = 0] \\
&= \pi_1 \{ \Pr [REP_t = 1 | REP_{t-1} = 1] - \Pr [REP_t = 1 | REP_{t-1} = 0] \} \\
&+ \pi_2 \{ E [c_t | REP_{t-1} = 1] - E [c_t | REP_{t-1} = 0] \} \\
&+ \pi_3 \{ E [\Delta X_t | REP_{t-1} = 1] - E [\Delta X_t | REP_{t-1} = 0] \}
\end{aligned} \tag{7}$$

By definition, if $REP_{t-1} = 1$, this means that as of election t , the incumbent is a Republican.

Under *no accountability*, marginal shifts in c and ΔX have no influence on equilibrium platforms, so $\pi_2, \pi_3 = 0$. However, we should expect the voting score difference between these groups to be positive since we already have an estimate of π_1 (the discontinuity jump) that is positive, and it is well known that the probability that a Republican district will remain Republican is about 90 percent (Jacobson 1997). This illustrates the first of the two identification problems mentioned above. It is rela-

²⁸ It may seem reasonable to presume that districts where the Republican becomes the incumbent have higher values of c . But our model specifically cautions against this inference. Equation 5 states that in equilibrium, vote shares V^{R*} are determined by *both* ΔX and c , and which party's candidate becomes the incumbent is perfectly determined by the realized vote share V^{R*} . As a result, c may be relatively *lower* for districts in which the Republican is the incumbent. To see this intuitively, ignore the nonlinearity of G , and consider $c, \Delta X, \varepsilon$ as multivariate normal. Even if β_1^* and β_4^* are positive (and even if ε is independent of both ΔX and c), the covariance between c and V^{R*} would be $\beta_1^* Var(c) + \beta_4^* Cov(\Delta X, c)$, which could easily be negative given sufficiently negative $Cov(\Delta X, c)$. If c were fixed within a district over time, then it would follow that elections where the Republican is the incumbent ($V^{R*} > \frac{1}{2}$ in the previous election), would have lower values of c , on average.

tively straightforward to address this problem, since one can estimate π_1 and $\Pr [REP_t = 1 | REP_{t-1} = 1] - \Pr [REP_t = 1 | REP_{t-1} = 0]$ independently from an estimate of $E [P_t | REP_{t-1} = 1] - E [P_t | REP_{t-1} = 0]$. Thus a simple test of the *no accountability* requires is a test of whether the product of the former two quantities is equal to the latter quantity in the data.

Since the first term can be estimated independently, it can be subtracted from the overall difference. If there is a significant remainder, this rejects the *no accountability* hypothesis in favor of *weak accountability*. However, even though *weak accountability* implies $\pi_2, \pi_3 > 0$, the theory implies little about the signs and relative magnitudes of $E [c_t | REP_{t-1} = 1] - E [c_t | REP_{t-1} = 0]$, and $E [\Delta X_t | REP_{t-1} = 1] - E [\Delta X_t | REP_{t-1} = 0]$. As a result, a small or negligible remainder can occur even under *weak accountability*, making the two hypotheses empirically indistinguishable. Casual reasoning might lead one to presume that these quantities would be positive, but our model suggests that this need not be the case. Since REP_{t-1} is partially determined by c_{t-1} and ΔX_{t-1} , the signs of these quantities will depend on the relative magnitudes of β_1^* and β_4^* and the variances of $c_t, c_{t-1}, \Delta X_t$, and ΔX_{t-1} and the covariances between them, all of which we cannot observe.

We argue this second identification problem can be addressed by examining the difference in voting scores between *bare* Republican- and *bare* Democrat-incumbent districts. If incumbency affects the relative candidate “qualities” ΔX_t but not preferences c_t , and under mild continuity assumptions regarding the unobservables, this contrast will keep preferences, on average, the same between the two groups.

To see this, suppose that $\Delta X_t = \gamma REP_{t-1} + v_{t-1}$, with $\gamma > 0$. v_{t-1} represents other unobservable factors that determine the relative qualities of the two opponents who will face each other in election t . This relation implies that if the Republican candidate wins in the district in $t - 1$, the Republican candidate – being a member of the incumbent party – will enjoy an advantage in terms of candidate “quality” in election t . As a specific example, suppose that voters, apart from their considerations of the candidates’ platforms, value a candidate’s experience in Congress. If a Republican won an election, this will guarantee that he can have at least one more term of political experience than his Democratic opponent in the next election.²⁹

²⁹ Lee [2001] shows that, on average, this is indeed the case. Incumbency has a significant impact on the political experience

If $\varepsilon_{t-1}, v_{t-1}, c_{t-1}, c_t, \Delta X_{t-1}, u_t$ is jointly continuously distributed, then an analogy to Equation 7

holds:

$$\begin{aligned}
& E \left[P_t | V_{t-1}^{R*} = \frac{1}{2} + e \right] - E \left[P_t | V_{t-1}^{R*} = \frac{1}{2} - e \right] \\
& \approx \pi_1 \left\{ \Pr \left[REP_t = 1 | V_{t-1}^{R*} = \frac{1}{2} + e \right] - \Pr \left[REP_t = 1 | V_{t-1}^{R*} = \frac{1}{2} - e \right] \right\} \\
& + \pi_3 \gamma
\end{aligned} \tag{8}$$

The difference is that the second term in Equation 7 vanishes due to the continuity of the joint distribution of $c_{t-1}, \Delta X_{t-1}, \varepsilon_{t-1} -$ which determines V_{t-1}^{R*} (and REP_{t-1}) – and c_t . Since the left-side and the first term on the right-side of Equation 8 can each be independently estimated, $\pi_3 \gamma$ can be estimated. Under *weak accountability*, $\pi_3 \gamma$ should be zero.

We do not directly measure ΔX_t ; instead we conjecture that incumbency will impact candidate qualities, but does not directly impact voter preferences – which are assumed exogenous. Thus, there are no meaningful “units” associated with $\pi_3 \gamma$. However, we can gauge the importance of this “residual gap” by reporting the reduced-form incumbency advantage among close elections $\Pr [REP_t = 1 | V_{t-1}^{R*} = \frac{1}{2} + e] - \Pr [REP_t = 1 | V_{t-1}^{R*} = \frac{1}{2} - e]$. This represents how much the probability of a Republican win would change due to an exogenous shift in ΔX_t caused by Republican incumbency. Our empirical test is based on examining whether candidates change their positions in a response to changes in ΔX_t that alter the “vote production function” for the candidates.

In summary, *weak accountability* implies that candidates running in districts where the Republican is the incumbent will find it optimal to position themselves more conservatively compared to candidates running in districts where the Democrat is the incumbent. Our empirical test focuses on districts where the Republicans and the Democrats *barely* became the incumbents in order to control for unobserved voter preferences. Within our framework, the divergence in these two groups’ voting records – beyond what would be expected since these two groups ultimately will have different proportions of Republican and Democratic representatives – is attributed to a behavioral response on the part of the candidates. The

difference in the next election. This happens not only because, by construction, incumbents can gain an extra term of experience, but also because losing candidates tend run again at lower rates, and are replaced by less experienced politicians.

central issue is whether an incumbency advantage (disadvantage) allows (compels) candidates to move closer (farther) to their party's position.

3.3 Empirical Findings

Our empirical analysis strongly suggests that the data are more consistent with the *no accountability* hypothesis than with the *weak accountability* hypothesis. Interpreted within our theoretical framework, the analysis indicates that Representatives from both parties *do not* alter their positions significantly in response to substantial exogenous shifts in the probabilities of winning an election – insofar as our interest group voting records reflect such “positions”. This is the case for the commonly-used ADA measure of Congressional roll call voting behavior. Furthermore, the result holds more generally across a broad array of different interest group voting scores.

3.3.1 Evidence from ADA scores

Test 1: Difference in Means in ADA scores To begin, we utilize data on ADA scores for all Representatives in the U.S. House from 1946-1988, linked to election returns data during that period. In particular, with this data we can estimate $E [P_t | REP_{t-1} = 1] - E [P_t | REP_{t-1} = 0]$ from Equation 7. This is simply the difference in the average ADA score for the candidates that won in Republican- and Democrat-incumbent Congressional districts. Consider a specific example where we use only one year of data. We would consider two groups of districts: those where Republican candidates were victorious in the 1984 election, and those where Democratic candidates prevailed in the 1984 election. In this example, we would compute the difference between these two groups of districts, in how the *eventual* Representatives of those districts in 1986 vote in the legislative session that follows the 1986 election. In general, since some districts change from Democrat to Republican and vice versa, we would expect each of these groups of districts to include some mix of Democrats and Republicans in 1986.

In practice, we make use of all the years of data available to us.³⁰ In this time period (from 1946 to 1988), we estimate $E [P_t | REP_{t-1} = 1] - E [P_t | REP_{t-1} = 0]$ to be -31.4 with a standard error of

³⁰ Due to decennial re-districting – which implies that districts, strictly speaking, cannot be matched exactly between years that end in a ‘0’ and ‘2’, we are forced to drop years that end in ‘0’; in those years, the “next-period” ADA score is necessarily “missing”.

1.1. The representatives that prevail in elections in initially Republican districts vote significantly more conservatively in the subsequent legislative session compared to those that prevail in the elections in initially Democratic districts. As mentioned previously, we would expect to see *some* difference at a purely *mechanical* level, under either *weak* or *no accountability*. Since there is a high re-election rate, initially Republican districts will have a higher proportion of Republican representatives (who, in general will vote more conservatively than Democrats) following the next election, compared to initially Democratic districts. Divergence *beyond* that which is mechanically predicted reflects a responsiveness of the politicians to how citizens will vote.

We calculate this predicted “mechanical” portion – represented by the product of π_1 and $\Pr[REP_t = 1|REP_{t-1} = 1] - \Pr[REP_t = 1|REP_{t-1} = 0]$ from Equation 7. Using the same sample as above, we estimate the “party effect” π_1 to be -42.8 with a standard error of 0.97 and the party re-election rate difference $\Pr[REP_t = 1|REP_{t-1} = 1] - \Pr[REP_t = 1|REP_{t-1} = 0]$ to be 0.820 with a standard error of 0.008 .³¹ Thus, under *no accountability* we would predict the gap to be $0.820 \times (-42.8) = -35.1$. The difference between the actual and the predicted is 3.7 (standard error of $.35$), and is highly statistically significant from zero.³² However, the magnitude of the deviation is modest, compared to the magnitudes -42.8 and -35.1 .

As mentioned previously, the power of this first test is somewhat limited, due to the unobservability of voters’ preferences to the researcher. For example, under *weak accountability*, divergence in candidates’ positions – beyond that predicted by the mechanical relation – may be offset by confounding differences in voter preferences between Republican- and Democrat-incumbent districts. It is possible that, compared to voters in Democrat-incumbent districts, those in Republican-incumbent are more liberal (lower c) than as the Republican candidates have other desirable characteristics (e.g. experience, charisma).³³ This would tend to work counter to any divergence in the candidates’ positions. In general, Republican- and Democrat-

³¹ Since the analysis in Section 2 indicates a fairly flat relation between the vote share and the average ADA score, we estimate the “party effect” π_1 simply by taking the mean difference in ADA scores between Republican and Democratic districts. We focus on the discontinuity gap estimates below.

³² All three quantities, $E[P_t|REP_{t-1} = 1] - E[P_t|REP_{t-1} = 0]$, $\Pr[REP_t = 1|REP_{t-1} = 1] - \Pr[REP_t = 1|REP_{t-1} = 0]$, π_1 , were estimated, and the variance-covariance matrix of the estimates – consistent with clusters based on district-decade – was computed. The “delta-method” was then used to construct the standard error of the deviation of 3.7 .

³³ Indeed, c may be negatively correlated with ΔX . For example, “low charisma” Republican candidates may not even enter the race unless the district is very conservative, whereas “high charisma” Republican candidates are the only ones that have a chance of prevailing in relatively more liberal district.

incumbent districts are likely to be systematically different in the underlying preferences of the electorate; these unmeasurable differences may impact the validity of this first test.

Test 2: Discontinuity Gaps in ADA scores Therefore, we examine a similar test, but one that focuses more narrowly among “close elections”, where districts *barely* became Republican- and Democrat-incumbent districts. The top panel of Figure 14 illustrates the first ingredient of this test. Using the same sample as above, it shows the average ADA score in election t , by the Democratic two-party vote share in election $t-1$, by 1 percent intervals. The jump at the 50 percent threshold is an estimate of the divergence in the Representatives’ positions between *bare* Republican-incumbent districts and *bare* Democrat-incumbent districts.³⁴ We estimate this gap by a regression of the ADA score in t on a 4th order polynomial in the Democratic Vote Share in $t-1$, with an intercept shift at the 50 percent threshold. We obtain a estimate of the gap of 21.2 with a standard error of 1.8.

As with test 1, even under *no accountability*, a gap is expected since 1) Republicans and Democrats possess systematically different, even among districts that are otherwise similar, and 2) Republican- and Democrat-incumbent districts differ in the proportion of the Representatives that are Republican and Democrat. The first point was documented in Section 2. Using this sample, the estimate of the discontinuity gap for the ADA score in the legislative session that immediately follows election $t-1$ is 48.1 with a standard error of 1.5.³⁵ The second point is illustrated in the bottom panel of Figure 14. Using the same sample, it plots the fraction of districts that become Democrat as of the election in t , by the Democratic two-party vote share in $t-1$, by 1 percent intervals. The jump at the 50 percent threshold is an estimate of the true electoral advantage to party incumbency [Lee, 2001]. Estimating the gap with a 4th order polynomial in the vote share and an intercept shift at 50 percent yields a gap of 0.55 with a standard error of 0.02.³⁶

These two estimates yield a predicted gap of 26.6., which should be compared to the actual gap of 21.2.³⁷ Again, the magnitude of the actual divergence in voting scores is actually slightly *smaller* than that

³⁴ In other words, it is an estimate of $E \left[P_t | V_{t-1}^{R*} = \frac{1}{2} - e \right] - E \left[P_t | V_{t-1}^{R*} = \frac{1}{2} + e \right]$.

³⁵ This is the estimate of π .

³⁶ This is the estimate of $\Pr \left[REP_t = 1 | V_{t-1}^{R*} = \frac{1}{2} + e \right] - \Pr \left[REP_t = 1 | V_{t-1}^{R*} = \frac{1}{2} - e \right]$.

³⁷ We reject the null of equality at conventional levels of significance. The test was carried out by estimating the variance of the

predicted by the *no accountability* hypothesis. We reiterate that the *weak accountability* hypothesis suggests that if equilibrium positions respond importantly to changes in shifts in relative candidate attributes, the actual gap should be somewhat *larger* than that predicted under *no accountability*. The distinctive aspect of Test 2, is that the regression discontinuity design arguably keeps voter preferences, on average, similar between Republican- and Democrat-incumbent districts.³⁸ As a result, there is no ambiguity of whether *weak* or *no accountability* is more relevant if the actual gap is of the same magnitude as the “mechanical” prediction.

It is useful to place our estimate of the deviation between actual and the “mechanical” prediction ($26.6 - 21.2 = 5.4$) in some perspective. Under *weak accountability*, moving a district from a Democrat-incumbent district to a Republican-incumbent district *causes* a change in the *equilibrium* probabilities that a Republican will win the election by about 0.55 probability, a fairly large magnitude. Our estimates imply that associated with this enormous change in the probability is only a 5.4 point *increase* (more liberal) (on a 100 point scale) in the positions of candidates in these districts.

3.3.2 Evidence from other Interest Group Scores

We further evaluate the empirical relevance of the *weak* vs. *no accountability* hypotheses by conducting the above Tests 1 and 2 on a broad array of other interest group scores. This provides a way of assessing whether the results for the ADA score were idiosyncratic or more “typical” among the various alternative roll call voting dimensions. We utilize 35 different voting scores in total, and the specific voting scores are described in the Data Appendix.

Figure 15 summarizes the results of performing Test 1 on the 35 different interest group scores. It plots the actual mean difference in voting scores for candidates in Republican- and Democrat-incumbent districts ($E[P_t|REP_{t-1} = 1] - E[P_t|REP_{t-1} = 0]$) against the estimate of the “mechanical” prediction. The estimates were computed in the same manner as described above. The figure shows that virtually all of the actual estimated differences lie fairly close to the predicted value, broadly consistent with the *no*

deviation between the actual and predicted gap. We estimated the three quantities jointly, calculating the cluster (within decade-district)-consistent variance-covariance matrix and then used the “delta” method to calculate the variance of the deviation.

³⁸ In other words, we are arguing that $E[c_t|V_{t-1}^{R*} = \frac{1}{2} + e] - E[c_t|V_{t-1}^{R*} = \frac{1}{2} - e]$ is approximately zero if e is small.

accountability hypothesis.³⁹

Test 2 was also performed on all 35 scores, and the actual and predicted discontinuity gaps are summarized in Figure 15. Under *weak accountability*, politicians make trade-offs between votes and the implicit penalty for deviating from the party line. Under *weak accountability*, the observations would lie above the 45 degree diagonal line. The Figure shows, however, that the actual discontinuity gaps are neither uniformly above nor below the diagonal line, and there are very few large departures from the “mechanical” prediction.⁴⁰ This indicates that “on average” – across an array of interest group scores – the data are broadly consistent with the *no accountability hypothesis*.

4 The Role of Parties and Limitations of the Analysis

The goal of this paper is to provide a credible test of the median voter theorem and weaker notions of politician accountability. In striving for a theoretical framework with some generality, our analysis has necessarily abstracted from a number of features of political markets that the literature has considered important. In this section, we briefly discuss some of the *mechanisms* for the influence of parties that have been discussed in the existing literature.

There are many different models that rationalize the correlation between roll- call votes and party affiliation. A first explanation for party influence focuses on ideological policy preferences of legislators. As several studies before us have pointed out, the correlation between party membership and roll calls does not necessarily imply that there exists a strong institutional party influence inside Congress. Rather, it may simply reflect the correlation between party affiliation and legislators personal ideology. One limitation of our framework is that we cannot assess how much of the documented party effect is directly due to the enforcement of party discipline, and how much reflects the personal ideology of legislators.⁴¹ The aim of our regression discontinuity design is to effectively randomize the party affiliation among Congressional

³⁹ The diagonal line represents the 45 degree line. We note that we can statistically reject the null hypothesis that the population quantities lie exactly on the 45 degree line at conventional levels of significance.

⁴⁰ We again note that we can statistically reject the null hypothesis that the population quantities lie exactly on the 45 degree line at conventional levels of significance.

⁴¹ Formally, this is clear from our assumption that utility U_R in equation 1 is decreasing in the distance between r and R . As we pointed out in Section 3, R may represent either party platform or a legislators’ ideological preferences, to the extent that these preferences are identical within a party.

districts. While such a research design is arguably successful in disentangling the role of voters preferences and party affiliation, we can not distinguish between a world where political parties enforce strict discipline on candidates who have no ideological preferences on their own (or have preferences orthogonal to party affiliation), and a world where there is no enforcement of party discipline but the candidates self-select into political parties on the basis of their ideological preferences (or are actively selected by the parties on the basis of their ideological preferences).⁴²

A second explanation for the influence of political parties in Congress focuses on the assumption that voters face high costs to collect information on candidates. In a world of imperfect information, parties serve as “brand-name” labels that convey useful, low-cost information to voters. The need for party discipline derives from the fact that the primary function of the party is to build a collective reputation for its members, and that members have individual incentives to engage in legislative activities that diminish the collective reputation (Snyder and Ting, 2000). For example, while it may be too costly for voters to obtain information on individual candidates economic platforms, a party might have a reputation for producing pro-labor or pro-business policies. Party discipline might be required from time to time in order to remind voters what the party’s position is and how strongly it holds that position. Alternatively, rather than being associated with a particular ideological orientation, brand names might instead advertise parties’ reputation’s for competence and honesty in the job of governing. Given the extreme complexity of most bills, and the high cost for voters to research each policy pros and cons in detail, voters may prefer to delegate the job to parties. Parties may be more or less capable at identifying good public policies, avoiding wasteful, pork-barrel-laden, logrolled outcomes, and choosing honest members. Establishing and maintaining a good reputation for honesty and efficiency may require some party discipline.⁴³

In a recent paper, Snyder and Ting (2001) generalize this standard model of imperfect information. Like in the standard model, voters want low-cost information about the candidates running for office, and political parties play a role in providing this information. But unlike the standard models, candidates are

⁴² Examples of studies that attempt to isolate the role of legislators preferences include but are by no means limited to Snyder and Groseclose (2000), McCarty, Poole and Rosenthal (2000), Poole (1998). Add more cites.

⁴³ Voters’ risk aversion may also play a role. Risk-averse voters prefer candidates and parties with more definitive stances on issues, and this definitiveness can work as a valence advantage for the party at election time.

able to provide their own, extra information, through such visible actions such as their roll call voting records. With these assumptions, members of Congress are concerned about the electoral consequences of their roll call voting records, as well as the party line. We view this theory as useful way to formalize the trade-off between the goals of the candidate and those of the party. What we call evidence that fails to reject the “no accountability” case, can be equivalently thought of as evidence supporting the dominant “label” role that parties may play in Congressional politics.⁴⁴

An alternative explanation for party discipline does not rely necessarily on imperfect information, but views parties as coordinating mechanisms for logrolling. Suppose that there are two types of bills: general interest bills that affect all districts (e.g. stem cell research, gun control, taxes, procedural votes) and district specific bills (e.g. appropriation for a military base in, say, San Diego; war memorial in Topeka, etc.). Voters, and therefore representatives, care about general bills and district specific bills that affect their own district. They do not care about district specific bills that affect other districts. Representatives are happy to support district specific bills sponsored by other representatives in their party as long as they are reciprocated. In this model the party leadership may act as coordinating device. Party leaders use party discipline to enforce the implicit contract among all members of the party. This kind of story is somewhat less relevant for our paper. We use interest group ratings that are mainly based on high-profile, general interest votes that are less likely to be object of vote exchanges.

A slightly different version of this model assumes that in some cases the party leadership may need to coordinate its members’ votes on issues that are a public good to the party. For example, members may be willing to sacrifice their district’s interests for the party’s good, but only on limited occasions. To insure that their sacrifice is not wasted, a leader may need to specify the occasions on which members are expected to vote the party line. On such occasions the leader does not trade favors or twist arms, but act as a focal point for choosing an equilibrium. Again, this is relevant for our results because this behavior on the part of

⁴⁴ Snyder and Ting acknowledge that although partisanship is probably the most important determinant of congressional election outcomes—to what party does the representative or senator belong, and what share of the district or state’s voters favor that party—other factors also matter. These include the strength of the opponent, incumbency per se, constituency service, the legislator ideological fit with the district. Establishing a good roll call record is one way a member of Congress can show how well she represents the district. Conversely, a member whose voting records do not adequately reflect the views of their constituencies are likely to find these records being used against them by their electoral opponents.

representatives may actually be in her voters' interests. Voting along party lines against a representative's own district interest in a limited number of occasions is likely to be rewarded by party leadership. It is in theory possible that the reward carries a benefit for the district that is larger than the cost of the votes cast against the district interests. For example, the reward may consist in more federal funds for the district, or the fast approval of a bill that benefits the district.

A final explanation for the correlation between party affiliation and roll call behavior is based on a model where candidates place extra weight on the preferences of their core supporters within the electorate. This may be rational on the candidate's part in a world where primaries are competitive and campaign support in the form of contributions and volunteers mainly comes from the group of core supporters. For example, in a widely cited paper on voting patterns of senators from the same state, Poole and Rosenthal (1984) argue that "state interests are less important than the support-coalition interests within each state". This is relevant for the interpretation of our evidence. To the extent that core supporters' preferences are more extreme than the median voter in the district, the dual constituency hypothesis may explain some of the gap that we have uncovered in Figure 3.⁴⁵

Finally, a legitimate concern is that interest groups may choose the criteria used to calculate their ratings based on partisan considerations. It is not clear precisely how this would impact the results, but it is fruitful to extend the analysis to votes on specific issues. For example, for the three most recent congresses for which we have data (100 to 103), we identify all roll call votes that contain the word "abortion" in the title or the description, and assign each candidate a zero if the candidate voted pro-life and one if the candidate vote pro-choice. We then calculate the percentage of pro-choice votes for each candidate. Such an index is arguably more objective than the interest group ratings, because it includes *all* votes on a specific subject, not just a selected sample, and assigns equal weight to all votes, not arbitrary weights. Figure 10

⁴⁵ A second, less restrictive version of the dual constituency model does not require that interest groups are more extreme than the median voter. Instead it focuses on decreasing marginal returns of representation. This second version can explain the apparent paradox that two senators from the same state have quite different voting records. It focuses on the implicit assumption that if two senators from the same state vote differently, at least one of the two senators must be voting differently than the interests of their constituents. One reason that this might not be true is simply because constituencies have diminishing marginal returns to getting an additional senator to represent them. If constituency A does not value the second senator who supports its positions as much as the first senator that it elects, it is quite possible that a second constituency B will value its first senator more than constituency A values its second but less than A value its first. For example, if the Democrats in a state have already won one of the two senate seats, they may not be willing to work as hard as they would have otherwise to win the second seat.

shows a pattern similar to that observed for the interest group ratings. A detailed regression discontinuity analysis of other easily identifiable issues may be a fruitful avenue for future research.

5 Conclusions

An assessment of the degree to which politicians are accountable to constituents' preferences must necessarily confront two analytical problems. First, voters' preferences are difficult to quantify and measure, and any arbitrarily chosen proxy for voter preferences may have unpredictable impacts on inferences about the extent of political competition, and the extent to which politician actions are implicitly constrained by the electorate. Second, even if voter preferences are presumed to be exogenous, they can easily be incidentally correlated with other unobserved determinants of politicians' actions, yielding the usual confounding problem.

In this study, we utilize a regression discontinuity design to effectively "control" for unobserved preferences, and provide a clear test of the key notion of the median voter theorem. We find that among otherwise similar Congressional districts, Republican and Democratic Representatives exhibit drastically different voting records; strictly speaking, this constitutes a rejection of the "perfect competition" result of the median voter theorem. We document the surprising fact that there is virtually no empirical association between Congressional voting records and the actual vote share received in the most recent election, once conditioning on the party that won the seat. This finding stands in sharp contrast to the broad patterns reported in the existing literature. Thus, the fact, by itself, highlights how sensitive an analysis can be to the choice of proxy for voters' preferences.

Indeed, our theoretical analysis cautions against drawing any inferences from correlations between equilibrium vote share outcomes and equilibrium politician actions. The model we outline emphasizes that the median voter result is in fact an extreme form of political competition whereby there are virtually no benefits (penalties) to supporting (opposing) the national party line. Our model illustrates that a weaker version of the median voter theorem – which we term *weak accountability* – can be perfectly consistent with the surprising lack of correlation between vote shares and voting records. However, we find no evidence

that U.S. House members alter their positions in response to the increase in the probability of re-election gained through an incumbency advantage. Thus, our empirical findings are neither consistent with *weak* or *strong accountability*. It should be emphasized that our analysis focuses exclusively on roll call voting records, and voters may in fact place more weight on specific policy outcomes or the consequences of those policies. Therefore, we conclude that evidence in support of some degree of politician accountability to voters would more likely be found in analyses of those implemented policies or their consequences – a topic for future research.

References

- [1] Ahmed and Greene "Is the Median Voter a Clear-Cut Winner? Comparing the Median Voter Theory and Competing Theories in Explaining Local Government Spending", *Public-Choice*; 105(3-4), pp. 207-30 (2000)
- [2] Bender "The influence of Ideology on Congressional Voting" *Economic Inquiry* 29- 3 (1991)
- [3] Bullock and Brady "Party Constituency, and Roll-Call Voting in the US Senate" *Legislative Studies Quarterly* 8 (1983)
- [4] Canes-Wrone, Brady and Cogan "Electoral Accountability and House Members' Voting" mimeo (2001)
- [5] Davis and Porter "A Test for Pure or Apparent Ideology in Congressional Voting" *Public Choice*, 60-2 (1989)
- [6] DiNardo, John, and David S. Lee, "The Impact of Unionization on Establishment Closure: A Regression Discontinuity Analysis of Representation Elections," *UC Berkeley Center for Labor Economics Working Paper #38*, September 2001.
- [7] Milton Friedman "Capitalism and Freedom", University of Chicago Press (1962)
- [8] Fuest and Huber "Tax Competition and Tax Coordination in a Median Voter Model" *Public-Choice*; 107(1-2), April 2001, pages 97-113.
- [9] Grofman,-Bernard, et-al. "Changes in the Location of the Median Voter in the U.S. House of Representatives, 1963-1996", *Public-Choice*; 106, 3-4 (2001)
- [10] Heckman and Snyder "A Linear latent Factor Voting Model", *Rand Journal of Economics* 28-0 (1997)
- [11] Jacobson, G. *The Politics of Congressional Elections*, Menlo Park, CA: Longman, 1997.
- [12] Kalt and Zupan "Capture and Ideology in the Economic Theory of Politics" *American Economic Review* 74-3 (1984)
- [13] Kalt and Zupman "The Apparent Ideological Behavior of Legislators: Testing Principal-Agent Slack in Political Institutions" *Journal of Law and Economics* 33-1 (1990)
- [14] Kau and Rubin "Self-Interest, Ideology and Log-rolling in Congressional Voting" *Journal of Law and Economics* 22-2 (1979)
- [15] Lee, David S. "Is there Really an Electoral Advantage to Incumbency?: Evidence from Close Elections to the United States House of Representatives," mimeo, Harvard University Department of Economics, April 2000.
- [16] Lee, David S. "The Electoral Advantage to Incumbency and Voters' Valuation of Politicians' Experience: A Regression Discontinuity Analysis of Close Elections", *UC Berkeley Center for Labor Economics, Working Paper #31*, April 2001.
- [17] Levitt "How Do Senators Vote? Disentangling the Role of Voter Preferences, Party Affiliation, and Senator Ideology" *American Economic Review*, 86-3 (1996)
- [18] Lott and Davis "A Critical Review and Extension of the Political Shirking Literature" *Public Choice* 74-4 (1992)
- [19] McArthur, John and Marks "Constituents Interests Versus Legislator Ideology: the Role of Political Opportunity Cost" *Economic Inquiry* 26-3 (1987).
- [20] Nelson and Silberberg "Ideology and Legislator Shirking" *Economic Inquiry* 25-1, (1987)
- [21] Osborne, M. "Spatial models of Political Competition under Plurality Rule: A survey of Some Explanations of the Number of Candidates and the Position they Take", *Canadian Journal of Economics*, 28-2 (1995)
- [22] Peltzman "Constituent Interest and Congressional Voting" *Journal of Law and Economics* 27 (1984)
- [23] Peltzman "An Economic Interpretation of the History of Congressional Voting in the Twentieth Century" *American Economic Review* 75-4 (1985)

- [24] Pettersson-Lidbom, Per. "Do Parties Matter for Fiscal Policy Choices? A Regression-Discontinuity Approach" CBRSS mimeo, May 2001.
- [25] Poole and Daniels "Ideology, Party and Voting in the US Congress 1959-1980" *American Political Science Review* 79-2 (1985)
- [26] Poole and Rosenthal "The Polarization of American Politics" *Journal of Politics* 46-4 (1984)
- [27] Poole and Rosenthal "A Spatial Model for Roll Call Analysis" *American Journal of Political Science* 29- 2 (1985)
- [28] Poole and Rosenthal "Patterns of Congressional Voting" *American Journal of Political Science* 35-1 (1991)
- [29] Shapiro, Brady, Brody and Ferejohn "Linking Constituency Opinion and Senate Voting Scores: A Hybrid Explanation" *Legislative Studies Quarterly* 15-4 (1990)
- [30] Snyder "Artificial Extremism in Interest Group Ratings" *Legislative Studies Quarterly* 17-3 (1992)
- [31] J. Snyder and T. Groseclose "Estimating Party Influence in Congressional Roll- Call Voting" *American Journal of Political Science*, 44-2, pp.187-205 (2000)
- [32] J. Snyder and M. Ting "Party Labels, Roll-Call Votes, and Elections" mimeo (2001)
- [33] J. Snyder and M. Ting "An Information Rational for Political parties" mimeo (2001)
- [34] Thomas "Election Proximity and Senatorial Roll Call Voting" *American Journal of Political Science* 29 (1985)
- [35] Turnbull, G.K. and Djoundourian, S.S. " The median voter hypothesis: Evidence from general purpose local governments" in *Public Choice* 81 pp. 223-240 (1994)
- [36] Van Beek "Does the Decision to Retire Increase the Amount of Political Shirking" *Public Finance Quarterly* 19-4 (1991)
- [37] Wright "Policy Voting in the US Senate: Who is Represented" *Legislative Studies Quarterly* 14-4 (1989)
- [38] Zupan "The Last Period Problem in Politics: Do Congressional Representatives Not Subject to A Re-election Constraint Alter Their Voting Behavior?" *Public Choice* 65-2 (1990)

Table 1: The Effect of the Party and Vote Share on Roll-Call Votes (part 1)

	Vote Share Only (1)	Vote Share and Party (2)	+/- 5 (3)	+/- 2 (4)	Polynomial (5)
(1) ADA Party		49.8 (0.7)	49.4 (0.7)	48.8 (1.1)	46.8 (1.3)
Vote Share	156.0 (1.5)	-3.8 (2.6)			
(2) Am. Civil Liberties Union Party		45.9 (0.7)	41.1 (3.8)	41.7 (6.6)	35.0 (9.2)
Vote Share	93.3 (7.2)	-46.5 (12.9)			
(3) League Women Voters Party		35.1 (1.8)	31.6 (2.0)	30.6 (3.3)	29.5 (4.7)
Vote Share	87.1 (3.3)	-19.6 (6.4)			
(4) League Conservation Voters Party		34.9 (1.7)	33.1 (1.8)	28.5 (3.0)	27.7 (4.4)
Vote Share	75.5 (3.3)	-31.4 (6.2)			
(5) Am. Fed. Government Employees Party		45.6 (9.7)	43.4 (2.9)	33.3 (5.1)	32.8 (7.1)
Vote Share	126.0 (5.5)	-14.8 (2.6)			
(6) Am. Fed. State, County, Mun. Emp. Party		51.0 (2.2)	49.0 (2.4)	45.9 (4.4)	45.8 (5.6)
Vote Share	148.0 (4.6)	-8.6 (8.0)			
(7) American Federation of Teachers Party		54.2 (1.9)	53.8 (1.9)	52.8 (3.4)	53.3 (4.8)
Vote Share	150.0 (4.5)	-16.0 (6.9)			
(8) AFL-CIO Building and Construction Party		34.5 (0.7)	35.5 (2.3)	41.5 (3.8)	38.6 (5.9)
Vote Share	101.0 (5.0)	-3.1 (8.2)			

Notes: Standard errors in parenthesis. The dependent variable are interest group ratings of roll-call votes. The model in column 1 includes only democratic vote share. The model in column 2 includes a democrat party dummy and democratic vote share. The models in columns 3 and 4 include a democrat party dummy. The model in column 5 include a fourth-order polynomial in democrat vote share that enters separately for vote share above and below 50%. The coefficient in column 5 is the predicted difference at 50%.

Table 2: (continued) The Effect of the Party and Vote Share on Roll-Call Votes (part 2)

	Vote Share Only (1)	Vote Share and Party (2)	+/- 5 (3)	+/- 2 (4)	Polynomial (5)
(9) United Auto Workers Party		56.6 (1.5)	54.2 (1.6)	51.6 (2.7)	50.3 (4.1)
Vote Share	158.1 (3.2)	-16.2 (5.5)			
(10) Taxation with Representation Party		30.0 (2.4)	31.1 (2.8)	28.2 (4.26)	28.7 (5.3)
Vote Share	93.4 (4.8)	4.5 (8.4)			
(11) Conservative Coalition Party		-51.3 (1.1)	-51.3 (1.1)	-53.9 (1.8)	-54.3 (2.7)
Vote Share	150.6 (2.5)	-15.0 (4.2)			
(12) Chamber of Commerce Party		-44.1 (1.7)	-43.46 (1.9)	-42.0 (3.2)	-41.8 (4.4)
Vote Share	132.0 (3.9)	-2.6 (6.6)			
(13) American Conservative Union Party		-50.5 (1.7)	-47.47 (1.9)	-45.7 (3.2)	-45.7 (4.5)
Vote Share	136.4 (3.7)	-18.5 (6.4)			
(14) Christian Voters Victory Fund Party		-51.0 (5.6)	-53.3 (5.1)	-48.9 (6.6)	-48.2 (14.6)
Vote Share	132.1 (11.7)	-18.8 (19.4)			
(15) Christian Voice Party		-60.3 (14.7)	-57.7 (3.9)	-55.0 (6.1)	-52.5 (10.1)
Vote Share	140.0 (8.8)	-42.2 (14.5)			
(16) Lower Federal Spending Party		-56.9 (3.7)	-54.7 (3.1)	-57.9 (3.9)	-54.3 (8.3)
Vote Share	213.8 (12.0)	0.2 (15.4)			

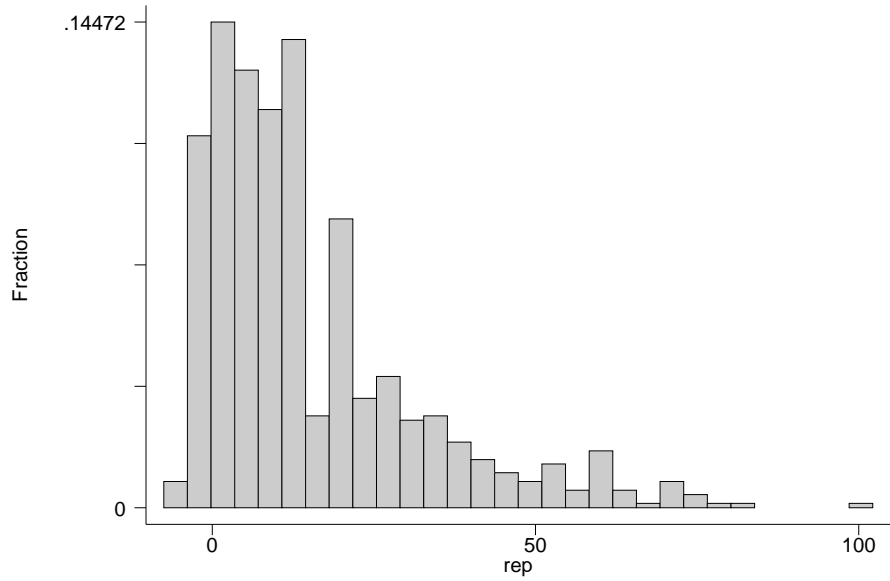
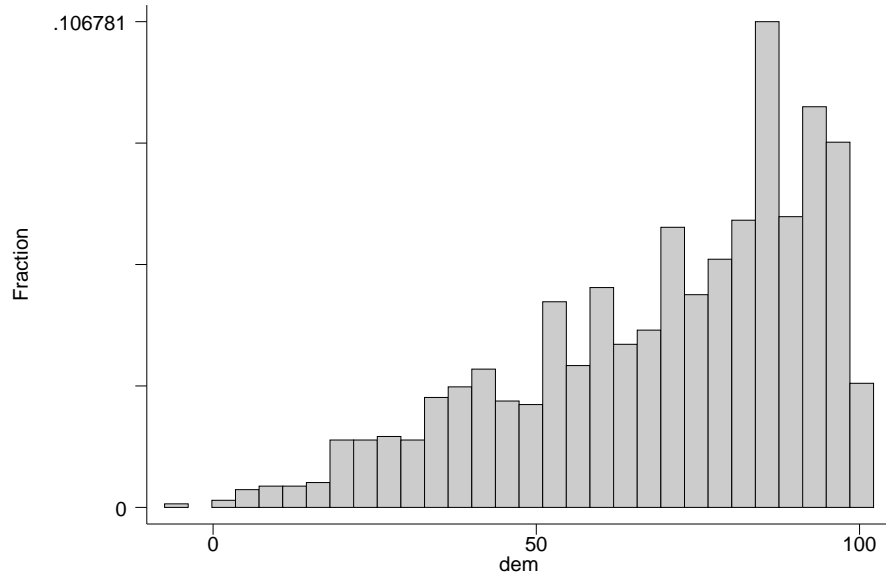
Notes: See previous table.

Table 3: Difference in District Characteristics between Democrat and Republican Districts

	All	+/- 25	+/- 10	+/- 5	+/- 2	Polynomial
	(1)	(2)	(3)	(4)	(5)	(6)
North	-0.211 (0.018)	-0.156 (0.019)	-0.096 (0.021)	-0.054 (0.024)	-0.059 (0.036)	- 0.041 (0.045)
South	0.250 (0.015)	0.145 (0.014)	0.093 (0.016)	0.053 (0.019)	0.009 (0.028)	0.015 (0.036)
West	-0.031 (0.013)	-0.012 (0.015)	-0.036 (0.020)	-0.003 (0.017)	-0.001 (0.020)	- 0.001 (0.036)
Log Income	-0.086 (0.013)	-0.036 (0.012)	0.014 (0.014)	0.026 (0.017)	0.030 (0.026)	0.052 (0.033)
Percentage High-School Grad	-0.035 (0.003)	-0.024 (0.003)	-0.008 (0.004)	-0.001 (0.004)	0.001 (0.007)	0.008 (0.008)
Percentage Urban	0.070 (0.011)	0.065 (0.011)	0.053 (0.012)	0.053 (0.014)	0.056 (0.023)	0.053 (0.028)
Percentage Black	0.082 (0.005)	0.042 (0.004)	0.013 (0.004)	0.003 (0.005)	-0.003 (0.009)	- 0.053 (0.013)
Manufacturing Employment	-0.002 (0.001)	0.000 (0.001)	0.004 (0.002)	0.004 (0.002)	0.005 (0.004)	0.003 (0.005)
Total Population	-1817.9 (3517.3)	3019.2 (3723.0)	4961.5 (4562.4)	3211.4 (5524.2)	8640.4 (8427.9)	2007.5 (10483.0)
Percentage Eligible to Vote	0.005 (0.002)	0.010 (0.002)	0.007 (0.003)	0.006 (0.004)	-0.003 (0.006)	- 0.003 (0.007)
Voting Population	1241.7 (3135.4)	6748.6 (3254.0)	6696.5 (3839.8)	5286.4 (4591.2)	3235.4 (6755.9)	- 786.8 (8541.0)
N	13413	10229	4174	2072	810	13413

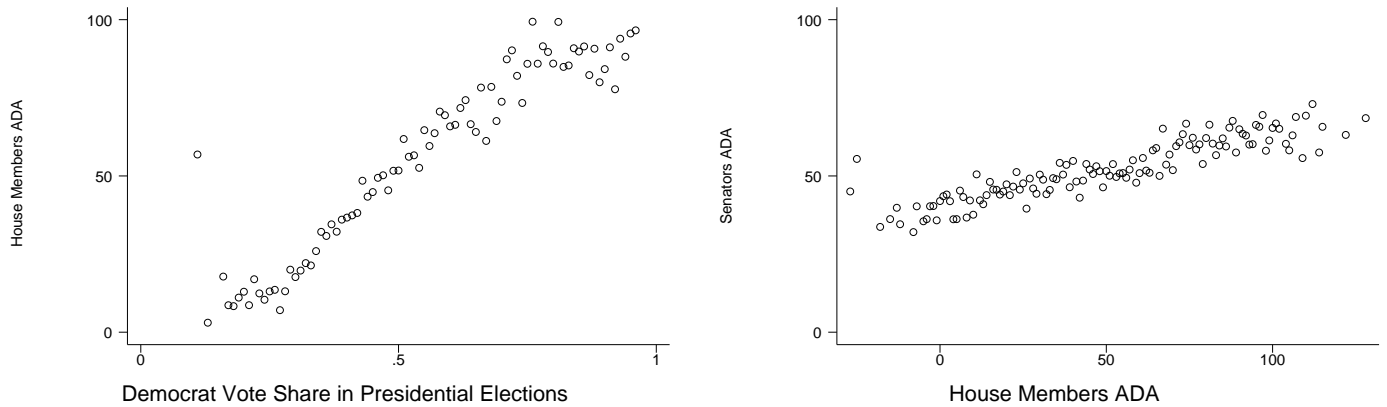
Notes: Standard errors in parenthesis. Columns 1 to 5 report the difference in average district characteristics between Democrat and Republican districts. Column 1 includes the entire sample. Columns 2 to 5 include only districts with democrat vote share between 25% and 75%, 40% and 60%, 45% and 55%, and 48% and 52%, respectively. The model in column 6 include a fourth-order polynomial in democrat vote share that enters separately for vote share above and below 50%. The coefficient reported in column 6 is the predicted difference in ratings at 50%. All standard errors account for district-decade clustering.

Figure 1: Distribution of ADA Scores, by Party

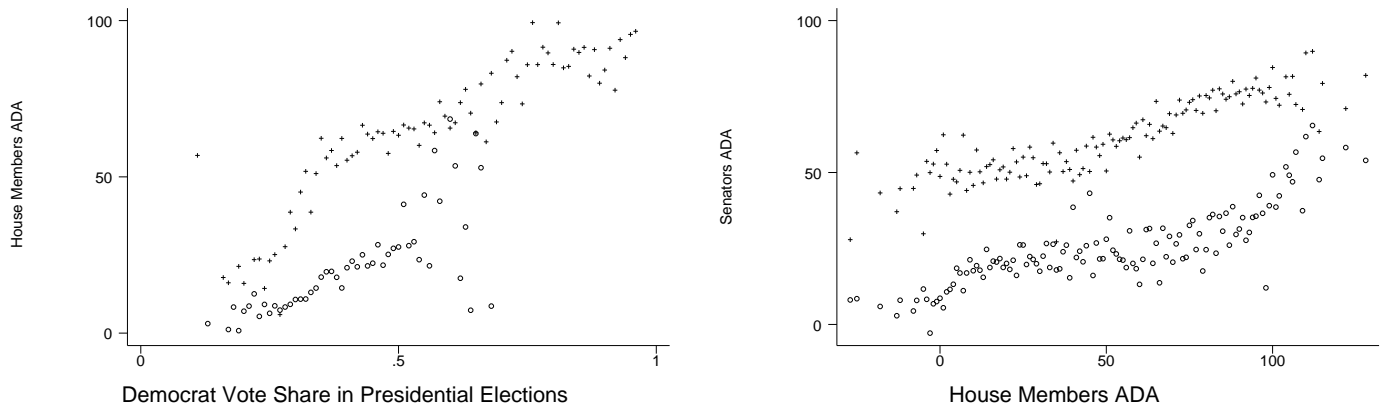


Notes: Real ADA scores.

Figure 2: Stylized Facts

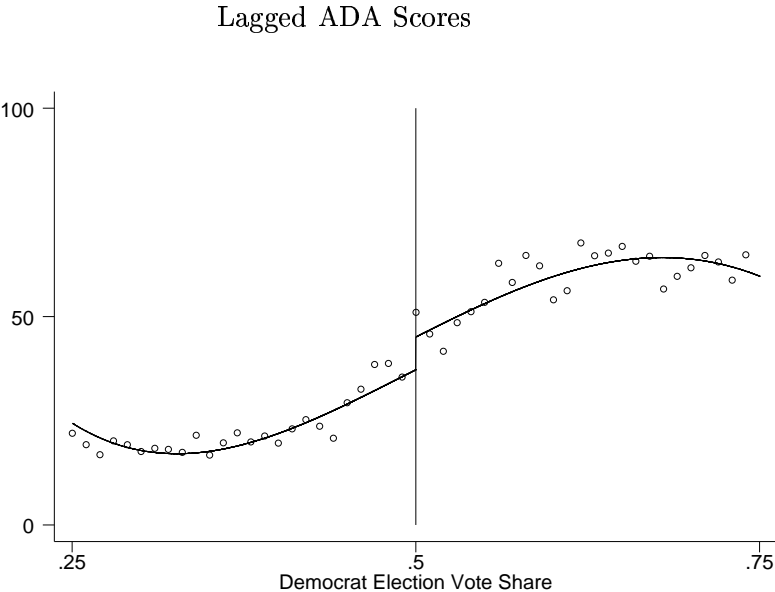
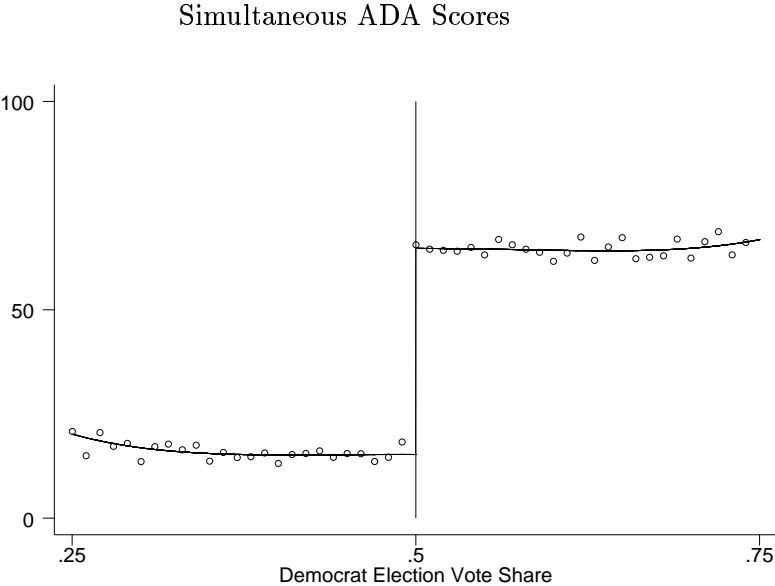


The left panel above plots the average ADA scores of senators against the average ADA scores of House members. Each point is the average ADA score within intervals 1 ADA point wide. The right panel above plots the average ADA scores of House members against the democrat vote share in presidential elections. Each point is the average ADA score within intervals 0.1 wide.



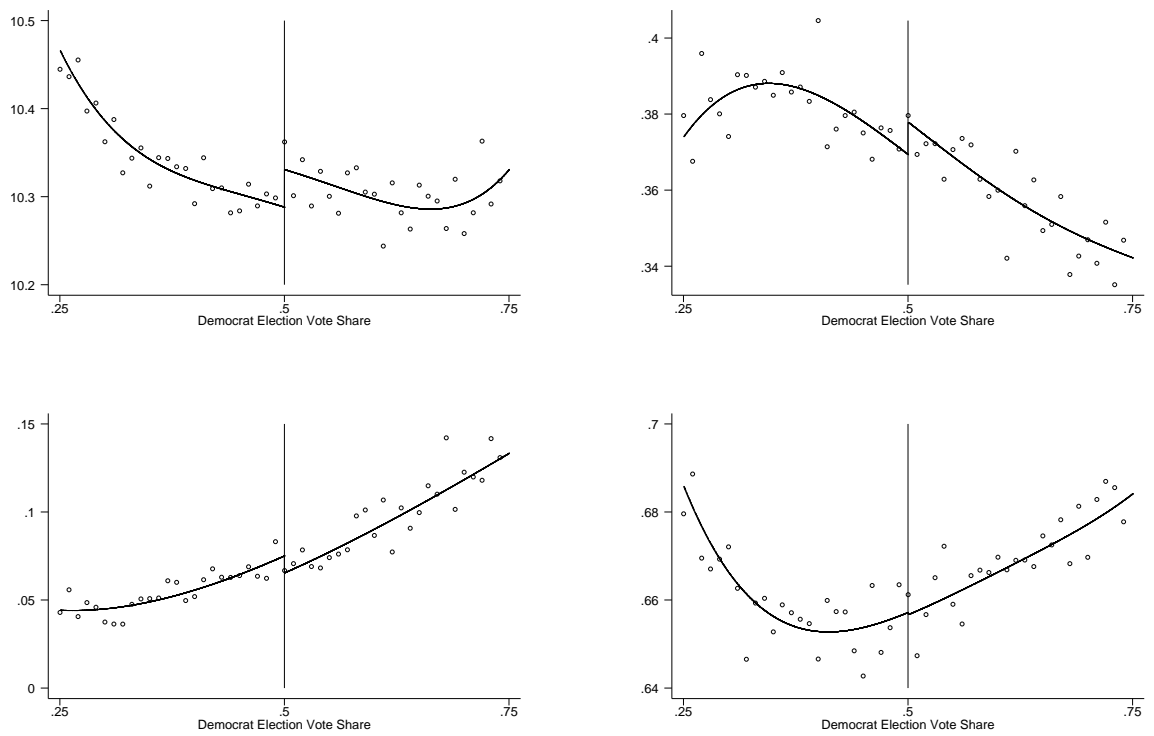
The left panel above plots the average ADA scores of senators against the average ADA scores of House members, by party of senators. Crosses are for democrats; circles for republicans. Each point is the average ADA score within intervals 1 ADA point wide. The right panel above plots the average ADA scores of House members against the democrat vote share in presidential elections, by party of members of the House. Crosses are for democrats; circles for republicans. Each point is the average ADA score within intervals 0.1 wide.

Figure 3: The Relationship between ADA Scores and Vote Share



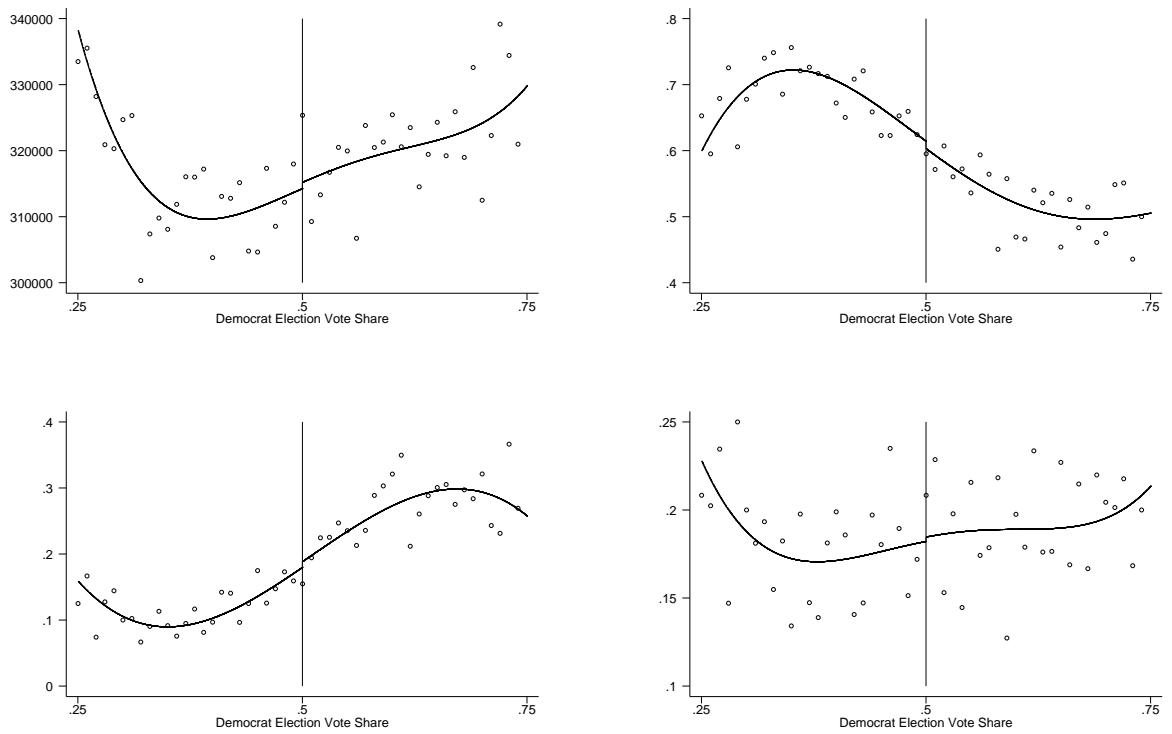
Notes: The top panel plots ADA scores against the democrat vote share. Each point is the average ADA score within intervals 0.001 wide. The bottom panel plots lagged ADA scores against the democrat vote share. Each point is the average lagged ADA score within intervals 0.001 wide.

Figure 4: Are Constituents Characteristics different in Democrat and Republican Districts? Part 1



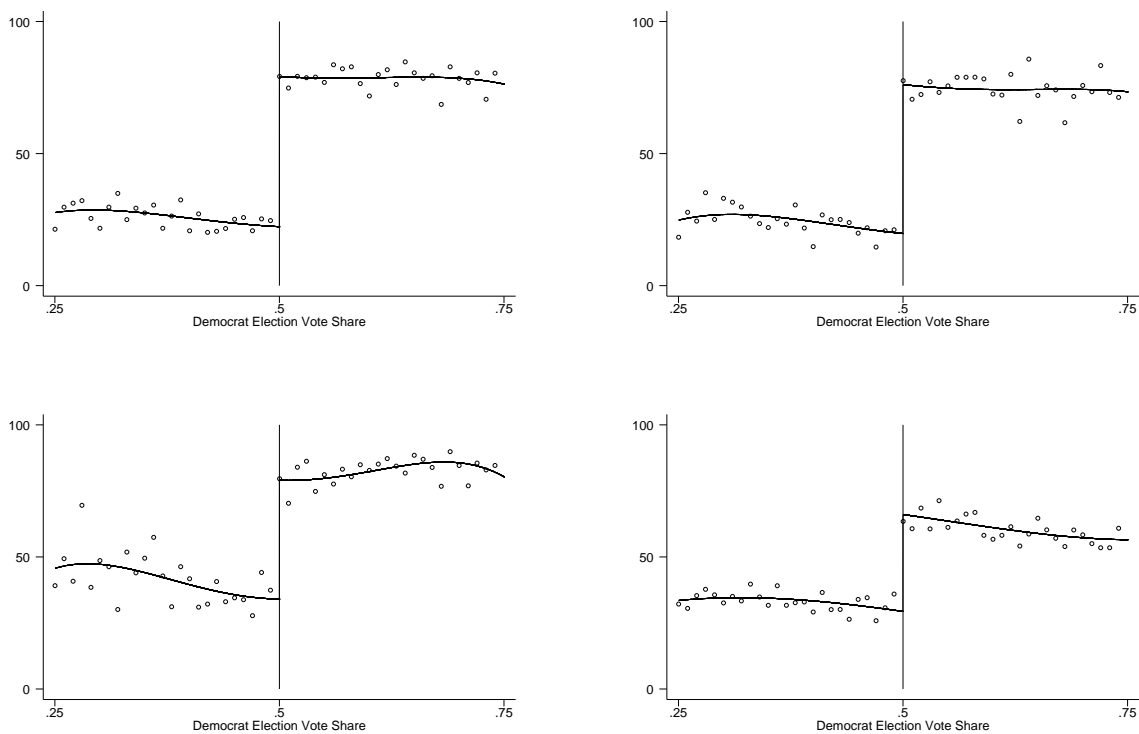
Notes: Panels refers to (from top left to bottom right) the following District Characteristics: real income, percentage with high-school degree, percentage black, percentage eligible to vote.

Figure 5: Are Constituents Characteristics different in Democrat and Republican Districts? Part 2



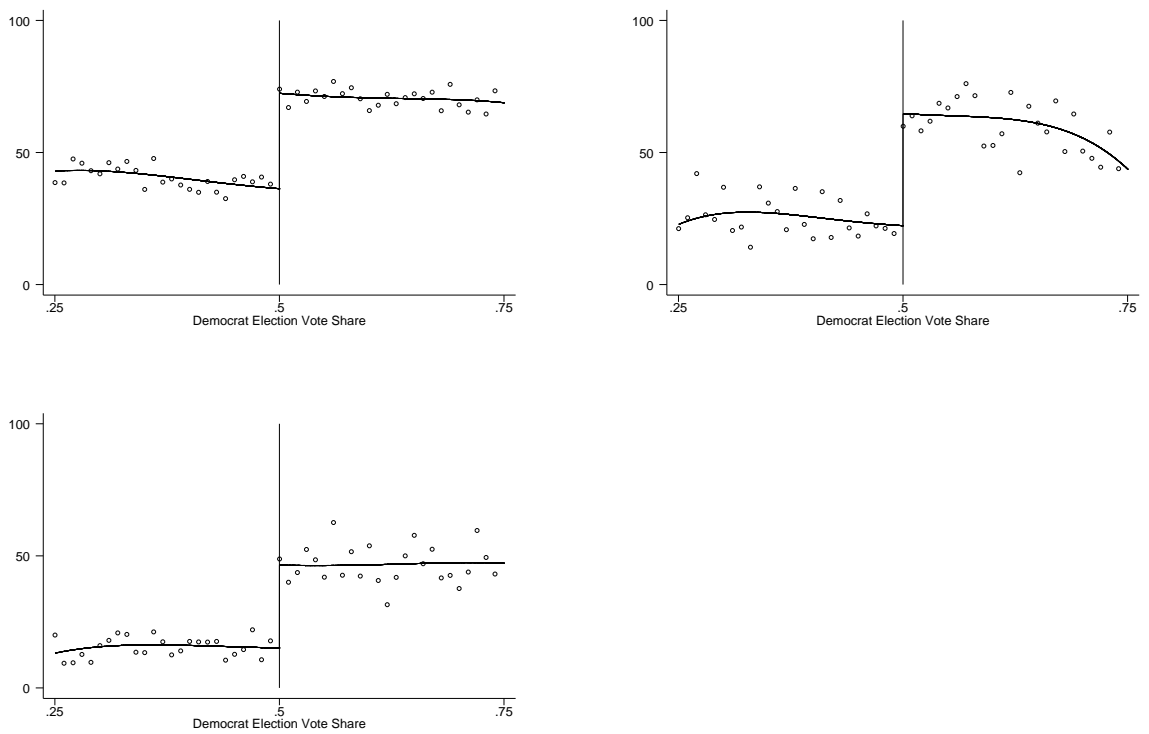
Notes: Panels refers to (from top left to bottom right) the following District Characteristics: voting population, North, South, West.

Figure 6: The Relationship between Interest Groups Ratings and Vote Share: Liberal Ratings 1



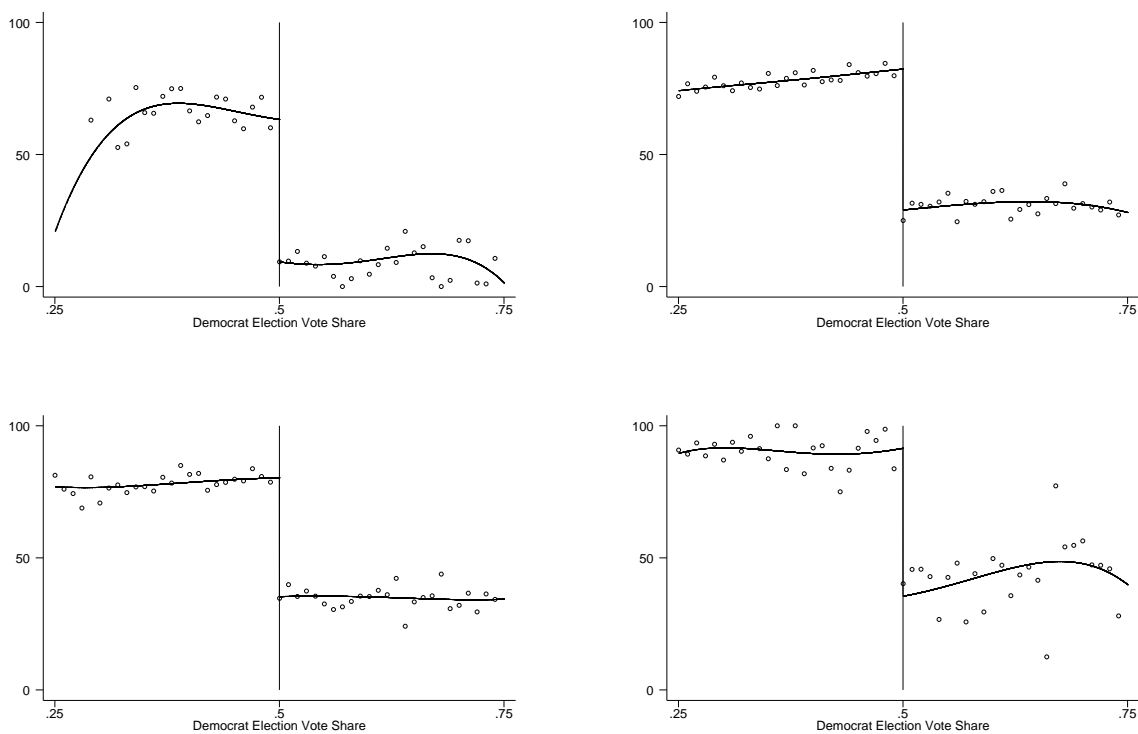
Notes: The top panel on the left refers to ratings from United Auto Workers. The top panel on the right refers to ratings from American Federation of Teachers. The bottom panel on the left refers to ratings from American Federation of Government Employees. The bottom panel on the right refers to ratings from League of Conservation Voters.

Figure 7: The Relationship between Interest Groups Ratings and Vote Share: Liberal Ratings 2



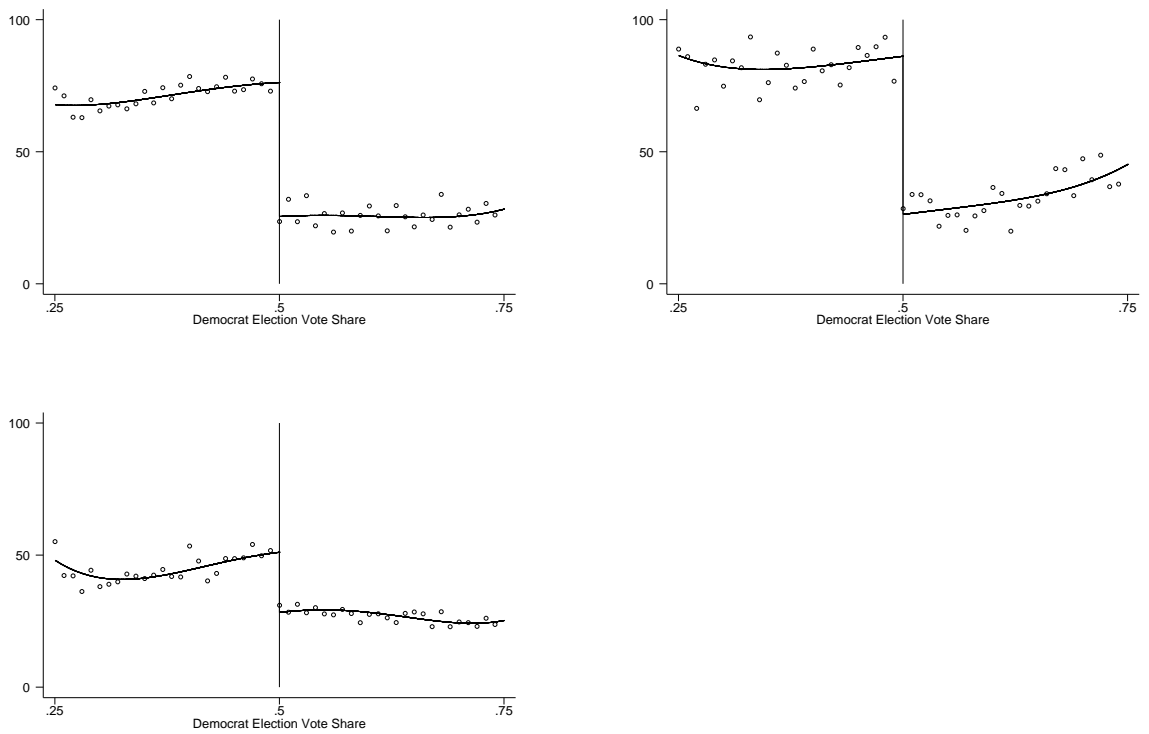
Notes: The top panel on the left refers to ratings from League of Women Voters. The top panel on the right refers to ratings from American Civil Liberties Union. The bottom panel on the left refers to ratings from Taxation with Representation.

Figure 8: The Relationship between Interest Groups Ratings and Vote Share: Conservative Ratings 1



Notes: The top panel on the left refers to ratings from Lower Federal Spending Support Score. The top panel on the right refers to ratings from Conservative Coalition. The bottom panel on the left refers to ratings from Chamber of Commerce. The bottom panel on the right refers to ratings from Christian Voters Victory Fund.

Figure 9: The Relationship between Interest Groups Ratings and Vote Share: Conservative Ratings 2



Notes: The top panel on the left refers to ratings from American Conservative Union. The top panel on the right refers to ratings from Christian Voice. The bottom panel on the left refers to ratings from National Taxpayers' Union.

Figure 10: The Effect of Party Affiliation on Roll Call Votes on Abortion

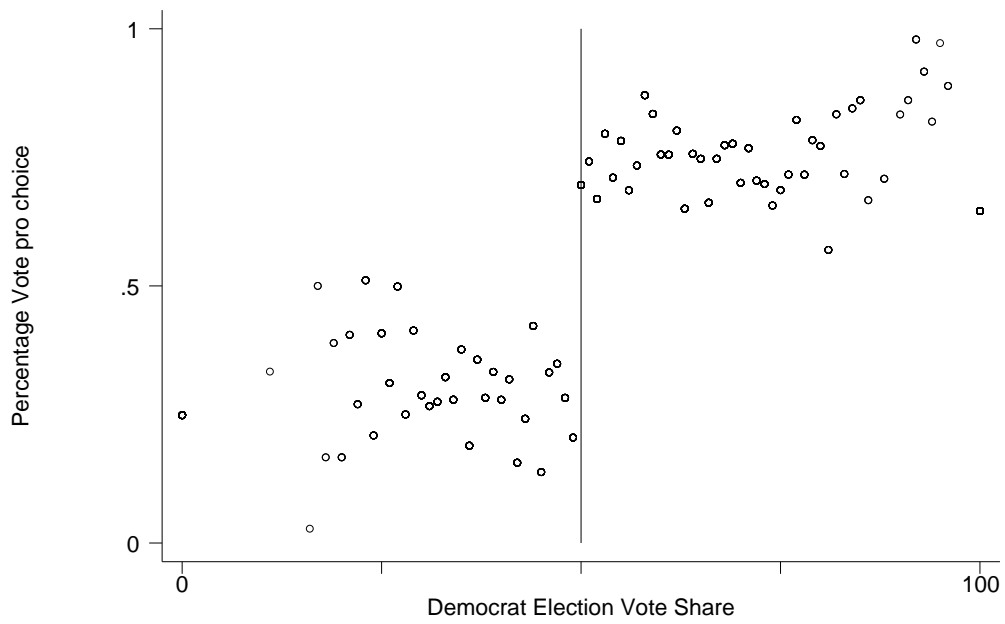


Figure 11

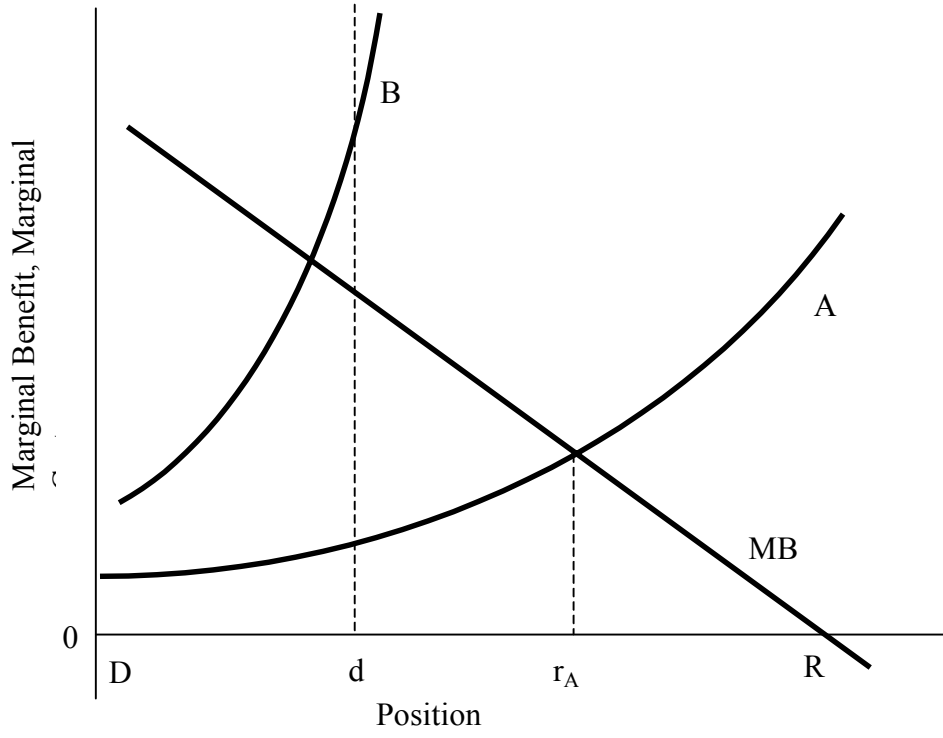


Figure 12

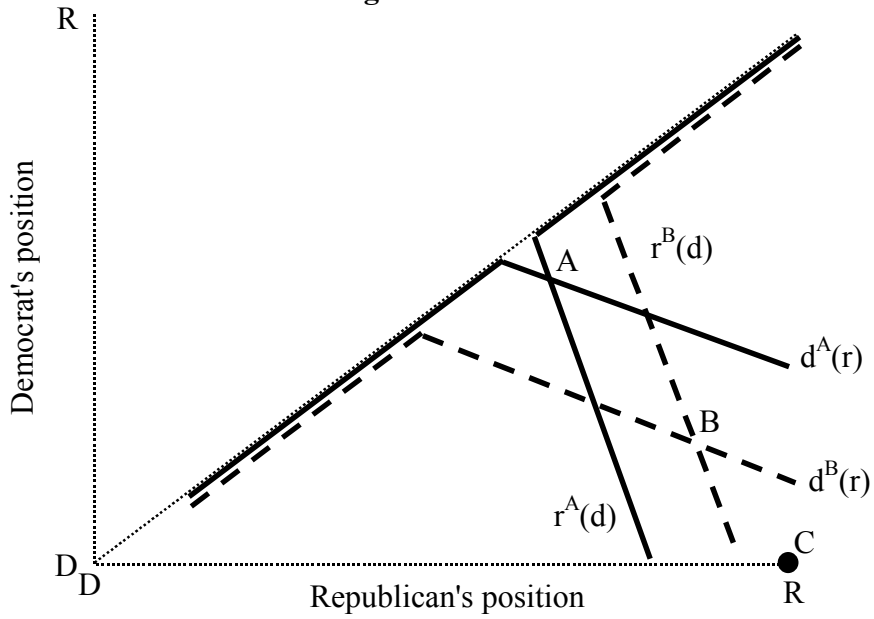


Figure 13

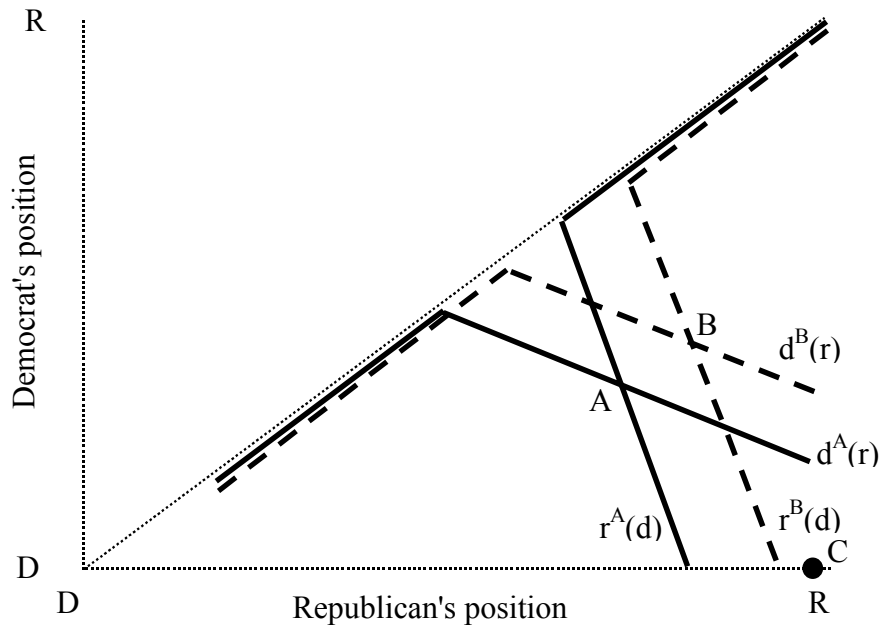


Figure 14a: Representative's ADA Score Election t, by Democratic Vote Share Election t-1, 1946-1988

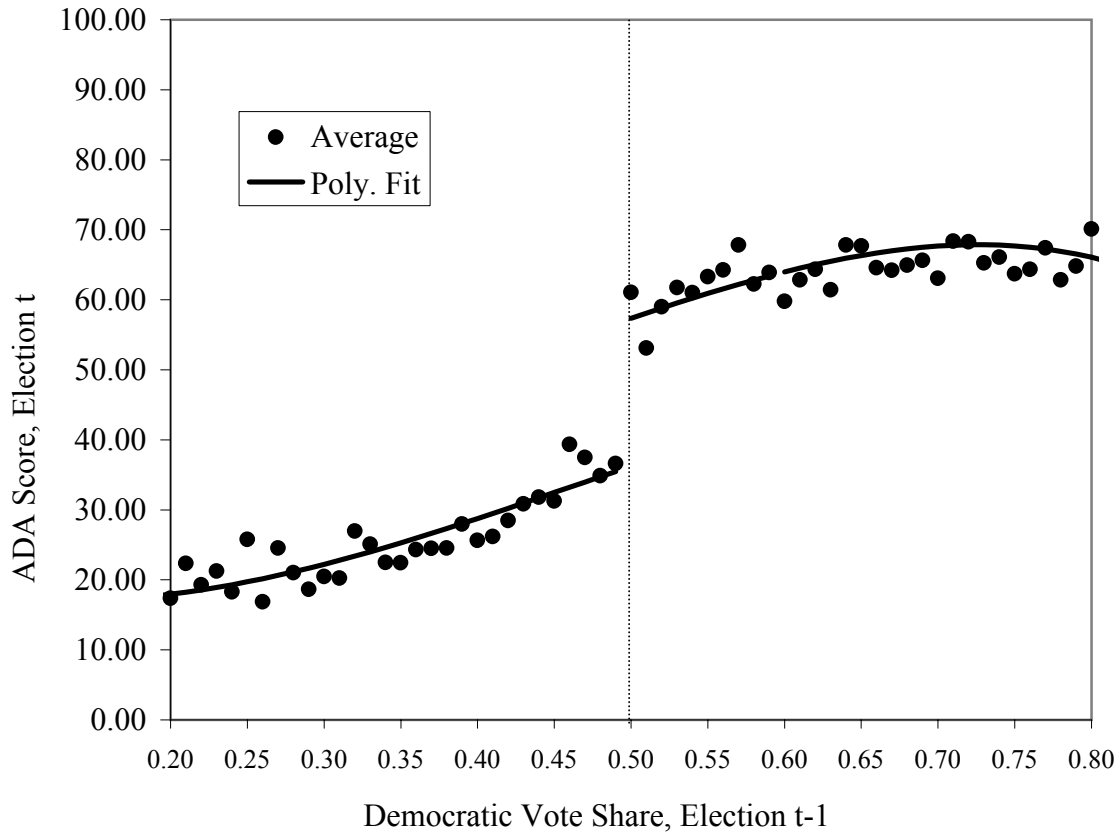


Figure 14b: Probability of Democrat Win Election t, by Democratic Vote Share Election t-1, 1946-1988

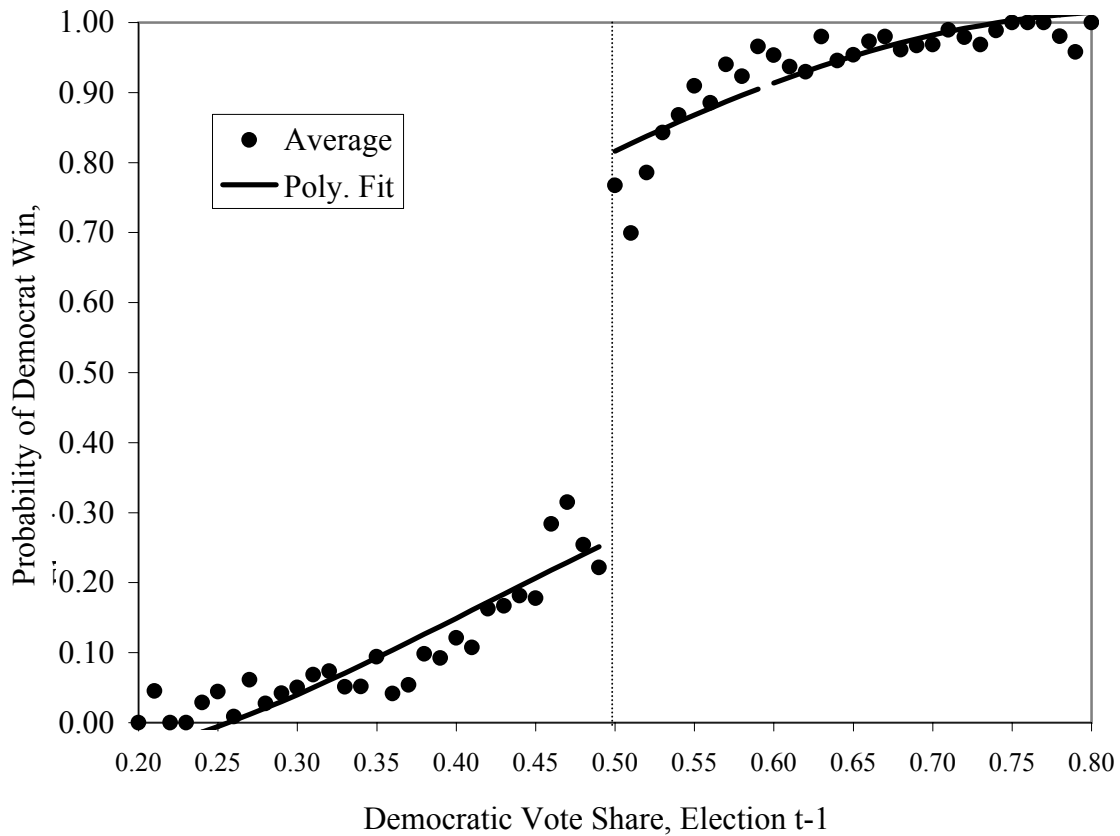
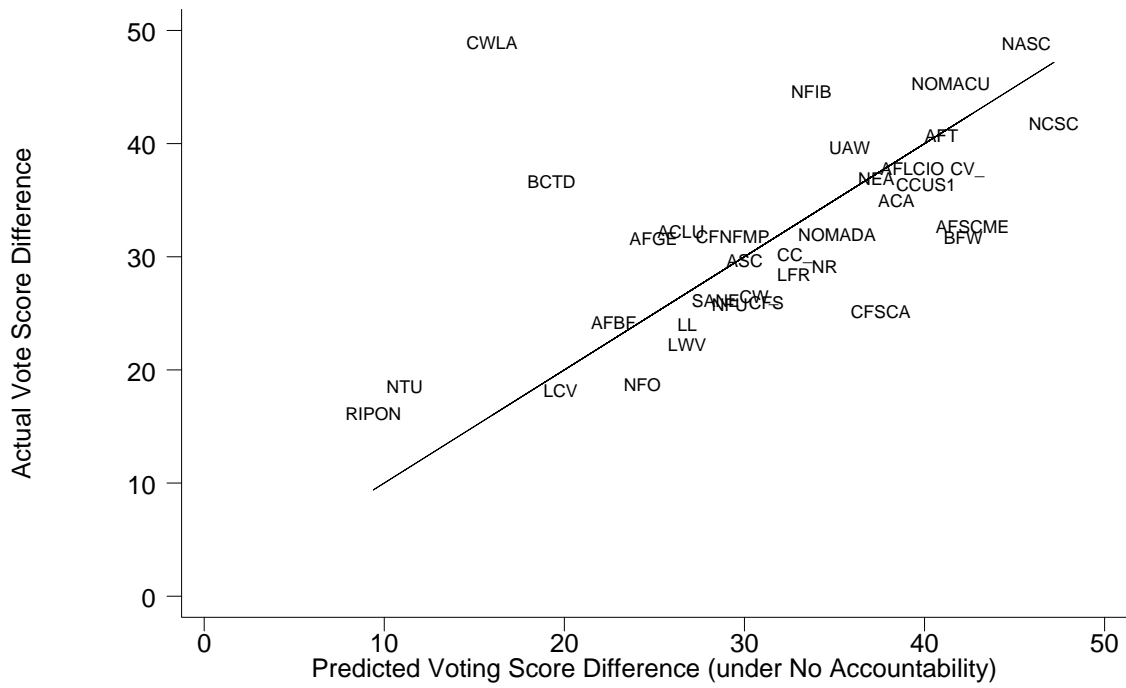


Figure 15

Test 1



Test 2

