RESEARCH NOTE

Special Elections to the U.S. House of Representatives: A General Election Barometer?

David Smith

School of Economic, Political and Policy Sciences

University of Texas at Dallas

and

Thomas L. Brunell

Professor

School of Economic, Political and Policy Sciences

University of Texas at Dallas

800 W. Campbell Road

Richardson, TX 75080

tbrunell@utdallas.edu

(972) 883-4963

Abstract

Vacancies in the House of Representatives are filled using special elections. These elections occur off the usual American electoral cycle, and the results of these elections are routinely portrayed by the American mass media as indications of what to expect in the next general election. We examine the predictive power of the results of special elections on the general election outcomes for the U.S. House of Representatives from 1900-2008 and find that those special elections that result in a change in partisan control do have predictive power for the general election.

Introduction

Vacancies in the U.S. House of Representatives are filled by special elections. Article 1, Section 2 of the Constitution states: "When vacancies happen in the Representation from any state, the executive authority thereof shall issue writs of election to fill such vacancies." If a sitting member of Congress resigns or dies prior to the next regularly scheduled general election, the Governor of a state may call a special election. These elections are different because they do happen off the usual electoral cycle. The results of the elections are often portrayed by the mass media as a reliable signal for what we can expect to happen in the next general election.

A recent example of this kind of linkage made by the media happened when former Republican Speaker of the House J. Dennis Hastert retired from his seat after the beginning of the 110th Congress. A Democrat won the special election and the Chicago Tribune's lead paragraph in their coverage read as follows: "In a stunning upset Saturday that could be a sign of

trouble for Republicans this fall, a little-known Democratic physicist won the special election for a far west suburban congressional seat long held by former GOP House Speaker Dennis Hastert."[1] While this kind of linkage makes for more interesting news copy, the question remains – do these off-cycle elections have any predictive power when it comes to the next general election?

There are reasons to expect special elections to be somewhat predictive inasmuch as national trends that have shifted since the last election ought to affect this isolated election. For instance, if the economy has markedly shifted one way or the other, the voters may be more inclined to reward or punish the party of the president (Tufte 1978, Kiewiet 1983). National trends are just that, national, so individual districts will feel, to some extent, a rise or falling economy, or a marked rise or decline in presidential popularity.

At the same time however, there are numerous reasons to be suspicious of the connection between a single election held in a single congressional district has anything important to impart about what will happen in November. First, national forces do not solely determine congressional election outcomes. Indeed, the outcome is going to be as much determined by local factors as it is by the popularity of the president. For instance, a member may have resigned because they got into some kind of ethical hot water, which could influence how voters perceive the would-be successor to the seat from the same party. Or an incumbent may have died and the widow or son of the incumbent may decide to run for the seat. Voters have a history of sending a relative of a recently deceased member of Congress to Washington to finish out a term, so this scenario would also affect election outcomes (Kincaid 1978, Solowiej and Brunell 2003).

Gaddie, Bullock, and Buchanan (1999) look at special elections and compare them to open seat elections in the general election setting and find that special elections are "subject to most of the same influences as other open-seat contests" (p. 110). They go on to state "special election outcomes that change partisan control can be viewed as the product of normal electoral circumstances and not referenda on the administration" (p. 110). We take this as evidence that there may be some predictive power in the general election that follows a series of special elections.

There is a substantial literature on forecasting congressional election outcomes. Much of the previous literature (Brody and Sigelman 1983, Lewis-Beck and Rice 1984, Lewis-Beck and Rice 1992, Lewis-Beck and Stegmaier 2000, Abramowitz 2006) examine the impact of presidential popularity and economic variables, as their main independent variables, in an attempt to forecast congressional elections in both the mid-term election and the presidential election cycles. In an effort to understand how the primary independent variables used for forecasting congressional elections allow for accurate results, Lewis-Beck and Stegmaier (2000) craft an intelligent work showing the explanatory power of the variables used in forecasting models. Beginning with Kramer (1971), Lewis-Beck and Stegmaier (2000) report "…he examined the effects of the macroeconomic indicators of inflation, unemployment, and income on House election outcomes in aggregate time-series models," in order to assess the impact of his theory that "when congressional voters judged economic performance to be satisfactory, they voted for the party of the president; otherwise they did not," (Lewis-Beck and Stegmaier 2000, 196). Building on this research, scholars further adapted the models from the work of Kramer (1971) to include supplemental variables in order to decrease the level of uncertainty when economics does not influence the outcome of elections. Further, Lewis-Beck and Stegmaier

(2000, 196) cite Tufte (1975, 1978) stating "[h]e theorized that House elections held between presidential terms were referenda on the economic and political performance of the president," showing that the use of presidential approval or coattails and economic performance as forecasting variables was a reasonable approach to predicting election outcomes.

Building on the models created by Kramer (1971) and Tufte (1975, 1978) many later scholars added additional variables in order to explain more of the variance in election outcomes. Economic indicators are not always the best method of understanding voter preference, "[i]n some models, economics shows a significant effect, but in others it does not," as a result we begin to see the inclusion of variables ranging from number of seats exposed in the forthcoming election (Campbell 1986, Lewis-Beck and Rice 1992, Oppenheimer, Stimson and Waterman 1986), party identification (Marra and Ostrom 1989) and past House vote (Erikson 1990). Abramowitz (2006) constructs a model that includes "generic vote" as a means of explaining variance when forecasting the 2006 House elections (863). Interestingly, Abramowitz (2006) excludes a variable that accounts for the change in the economic conditions as a determinant in the forthcoming House election. As a result, it could be concluded that the "generic vote" variable is the actual view that the economy has improved/declined based on the preference of the respondent's answer. Some scholars have concluded that while the simplest variables seem too easy, as demonstrated over time, it is often the best choice for the forecasting of results.

Lewis-Beck and Rice (1992) examine the ability to forecast congressional elections based on the independent variables of: economic conditions, presidential popularity and midterm status (63). The authors' believe that the "strength of the relationship" between the economy and election is related to the type of election, first the presidential election year and then the mid-

term election cycle, however both are positively related with presidential elections have a higher

level of significance than mid-term elections (63-4).[2]

More recently there has been a debate among scholars regarding the relative forecasting

utility of election markets, like the Iowa Election Market (IEM), where people can buy "futures"

in candidates or parties to win the upcoming election, versus using polling data. Erikson and

Wlezien (2008) prefer the latter model, showing "when poll leads are properly discounted, poll-

based forecasts outperform vote-share market prices.   Wolfers and Zitzewitz (2004) and

Caldeira (2004) both fall into the former group that argue the aggregate behavior of individual's

risking money on election outcomes tend to be reliable and accurate predictors of election

outcomes. Neither of these methods is implicated here, as both polls and election markets reflect

many different variables that affect an election outcome.

Data and Hypotheses

We collected election outcome data for all special elections to the U.S. House of

Representatives from 1900-2008. We measure how well the two parties fare in the special

elections several different ways. First, we utilize the results of *all special elections* in the period

between general elections and subtract the number of elections won by Republicans from the

number won by Democrats. However, since a party retaining a seat in a special election might

not be indicative of much more than a party holding on to a very safe seat, we also use *only those*

special elections in which one party or the other picks up a seat that was previously controlled

by the other party. We construct a similar differenced variable for just these elections (number

of Democratic pick-ups minus the number of Republican pick-ups). Next, since the frequency of

special elections in any two-year period varies (and the secular trend is toward fewer elections

over time) we also use the proportion of seats won by Democrats both in terms of all special elections and in terms of those special elections that results in a change of party control.

We gathered the results of the general election outcomes for the same time period, which serve as the dependent variable in our models. The hypothesis we test is straightforward – does the information from special elections prior to a general election predict the general election outcome? Our unit of observation is the general election, so we use all special elections between two elections matched to the general election that immediately follows this period (i.e. special elections between the general election of 2006 and the election of 2008 are matched with the 2008 general election outcome). Since most social scientists do a reasonably good job of modeling aggregate general election outcomes with just a couple nationwide indicators (state of the economy and presidential popularity are commonly used in these models), we theorize that special elections, particularly those that result in a change in partisan control of the seat, should be a leading indicator of the general election.

Our expectations are tempered by several important facts. First, the frequency and whereabouts of special elections is stochastic, but hard to predict. Someone must leave office, either by resignation or death, in the middle of a term in order for a special election to be called. Therefore, some years there might be just two or three elections, and in other years there are dozens. The total number of special elections, as well as the number of special elections that results in the change of party control for a seat is depicted graphically in Figure 1. Clearly there is a wide range of the number of specials and the overall trend of time is fewer special elections. Most special elections result in the same party controlling the seat, however as we will show later, the few seats in which partisan control changes tend to be a better leading indicator than all specials.

One could imagine that we have a problem with endogeneity. Politicians are strategic (Mayhew 1974, Fenno 1978, Jacobson and Kernell 1983, Jacobson 1989 and Hall and van Houweling 1995) and Cox and Katz (1999) have documented that both incumbents and would-be challengers strategically enter and exit the electoral arena. Thus, we could see many special elections when MC's are resigning strategically in anticipation of an upcoming loss in the next general election. These kinds of concerns, while important, are less valid we argue, because while MC's certainly may not run in the next election because they might lose, there is no evidence that they will resign mid-Congress in order to avoid the next election.

=== Figure 1 about here ===

The demography of congressional districts varies wildly, where some districts are very competitive and might reflect the national distribution of partisanship, while others are notoriously unrepresentative of the nation because they are quite homogeneous. The districts in which special elections are held are also random. Therefore, there might be ten special elections in a year, but if they all happen to be in solidly Democratic districts and the Democratic candidate carry them, what kind of predictive power can we expect from those results? This idea is reinforced by Gaddie, Bullock and Buchanan (1999) who state that, "[b]ecause special elections occur in effective isolation, the results of those contests may also depend more heavily on the political dynamic of the constituency and on the political assets that the candidates bring to the contest," believing that the district partisanship is more significant than the national party affiliation (105). Because of this mix of factors we expect special elections, particularly those that result in a change in partisan control (like the Hastert example), to have some predictive power for general elections.

Data Analysis

Since, as we mentioned above, there are complicating factors with the data in terms of a purely linear model. Even if a party has a watershed year in a general election, picking up dozens and dozens of seats, there may have only been 3 special elections in the run-up to the general election. Thus, expecting a strictly linear relationship is a bit questionable. Since the number of special elections has ranged from 3 to 27, with an average number of 12.3 and a standard deviation of 5.5, and neither party can control either the number of special elections nor in which districts they will be held, we examine whether or not a gain in seats during special elections (i.e. just directionality rather than directionality *and* magnitude) is related to a gain in seats in the general election.

Table 1a contains the results of a cross-tabulation of our two dummy variables (did the Democrats win more or fewer special elections than the Republicans and did the Democrats win or lose seats in the general election). This is a test of how well the results of special elections is predictive of the general election. The results show that they are not. When the Democrats lose more special elections than they win, they are equally likely to win or lose seats in the general election. When the Democrats best the Republicans in special elections between general elections, they win seats in the general election that follows 58 percent of the time. The chi-squared statistic, not surprisingly, is not significant.

However, when we only use those special elections that result in a change in party control of the seat, the results are very different. In Table 1b we change the independent variable to be – whether or not the Democrats have a net gain of seats as a result of special elections. This data confirm that there is positive relationship between these variables. When the Republicans have a net gain in special elections they also tend to win seats in the following general election (66.7 percent of the time). For the Democrats, the relationship is even stronger

9

as that they take seats away from the Republicans in the special elections they follow that up with a seat gain in the general election 82.35 percent of the time. The chi-squared statistic shows the null hypothesis of no relationship between these two variables can be rejected.

=== Tables 1a & 1b about here ===

Next we turn to our multivariate analysis, where we include variables for midterm loss and presidential coattails as well as three different operationalizations of the special elections advantage. For midterm loss we use a simple trichotomous variable that takes on values of 1 when it is a midterm with a Democratic president, 0 for on-year elections, and -1 if it is a midterm with a Republican president. This variable should be negatively correlated with the dependent variable. For presidential coattails we use the Democratic share of the vote in presidential election years centered around zero (small positive values indicate a narrow Democratic win, small negative values indicate a narrow Republican win). We expect the coefficient for this variable to take on positive values.

=== Table 2 about here ===

We run our all of our statistical analyses twice – the first time using all special election results for our variables of interest, and then again just using those specials that result in a change of party control. Table 2 contains the results of our analysis using all specials. In Model 1, the independent variable is the proportion of seats won by the Democrats that result in a change in party control. The variable ranges from 0 to 1 and we expect it to be positive, which it is. The coefficient is 1.19 and just barely bigger than its standard error. So as in Table 1a, the results of all special elections are not a statistically significant predictor of the general election outcome. The coefficients for the Midterm Loss and Presidential Coattails variables both take on the expected signs and are significant.

In Model 2 we use just the raw differences in special election outcomes (number of specials won by Democrats minus the number of special elections won by Republicans) as our predictor. While the coefficient is positive, as we expected, it too is not statistically significant. Not surprisingly, Midterm Loss and Presidential Coattails continue perform as expected.

Finally in Model 3 we operationalized special election variable of interest by calculating the vote margin between the first and second place finisher in each special election, coded it for which party won, and compared that margin to the most recent general election in that district.[3] The logic here is that there may be valuable information in not just which party wins a special election, but by how much and how that compares to the most recent general election in that same district. Given the operationalization, we expect the coefficient to take on a negative value, which it does. Moreover, the coefficient is statistically significant. So while the results of all special elections is generally not a great predictor for what happens in the general election that follows, parsing the data a bit more carefully, there is some predictive power in the differences in the vote margins. For example, one could imagine a safe Democratic district in which a Democrat resigns and in which the Democratic candidate in the special election easily wins the election, if there is a tide toward the Republicans that yet, the candidate winning the special may win by only a couple percent, whereas the previous incumbent consistently beat Republicans handily.

=== Table 3 about here ===

Next we turn to Table 3 in which we use data only from special elections that result in a change in party control. Here we expect our variables of interest to perform better than those in the previous analysis. Model 1, which uses the proportional operationalization, demonstrates that this is in fact the case. The coefficient for our variable is both positive and statistically

significant. The coefficient is 14.77, which means that when the Democrats win all the special

elections that result in a change in partisanship prior to a general election, then can expect to pick

up, on average, nearly 15 seats in that election. The coefficients for Midterm Loss and

Presidential Coattails both take on the expected sign and are significant beyond the .001 level.

In Model 2 we use, rather than the proportion, which is censored at 0 and 1, the raw

difference between the number of seats won by Democrats and those won by Republicans

(again this is just for those elections that result in a change in party control of the seat).

The coefficient for this variable is also positive and statistically significant and takes on a

value of 6.37, which indicates that for every net seat gain (loss) by the Democrats in special

elections, they can expect to pick up (lose), on average, over 6 seats in the following general

election. The midterm loss and coattails variables also work according to our

expectations.[4]

Finally, as we did in Table 2 above, we incorporate information from margins of

victory in special elections and general elections to see if that provides some predictive

power.   In Model 3, the results conformed to our expectation; the coefficient for this

variable is negative and statistically significant at the .05 level. The other two control

variables take on very similar values to the coefficients in the previous two models, and

both are highly significant. So taking into account not only whether a party wins a special

election or not, but also the margin of victory by which a candidate wins the special

election is a leading signal for what may happen in the general election that follows.

Therefore, when a party picks up more seats in special elections than the other

party, they can usually count on picking up seats in the general election. The evidence

indicates that when one party wins picks up a number of seats between general elections, this is, at least in part, due to national political trends.

Figure 2 graphically represents the relationship between the proportion of seats that changed hands won by the Democrats each special election season and the general election results that follow. It shows that there is a moderately strong positive relationship between the proportion of net gains (losses) in special elections and net gains (losses) in the general election. When the Democrats pick up seats in-between general elections, they can usually expect to fare well in the following general election.

=== Figure 2 about here ===

Conclusion

In this paper we sought evidence regarding the validity of the commonly held notion that when the candidates from one political party do particularly well in special elections they can expect to do well in the following general election. This hunch is true to the extent that when a one party takes seats away from the other party in these elections, they generally fare reasonably well in the general. It is also the case that using data on the actual margins of victory from all special elections, including those that result in partisan "holds" has some predictive power for the following general election. These results make sense since special elections are almost always open seat elections, and national forces are likely to impact the outcome of these elections.[5] Clearly many districts are drawn in such a way that one party or the other is almost certainly going to win the seat, but these are not the kind of elections that we found to have much predictive power (i.e. safe districts that elect MCs almost exclusively from one party or the other). Moreover, while we do not deny the fact that local factors can weigh heavily in House elections, there clearly is information about election trends in these isolated events. Given that

13

the location and frequency of special elections is a stochastic process that is hard to predict, it is somewhat surprising that these elections have predictive power at all. The data do demonstrate though that the directionality of seat change (i.e. which party will win seats) is highly correlated to how well the parties do in special elections, and to a lesser degree, so is the magnitude of that seat change.

We are not arguing that this relationship established here is necessarily causal; rather the results of special elections are a barometer of sorts that provide some information about the national political mood, which manifests itself in the general election that follows. One could, however, imagine a causal connection – high quality candidates witness the results of these special elections and interpret the results as an indicator of swing toward their party, which motivates them to run for office. Future research might investigate whether the emergence of high quality candidates is linked to the results of special elections.

Bibliography

Abramowitz, Alan I. 2006. "National Conditions, Strategic Politicians, and U.S. Congressional

      Elections: Using the Generic Vote to Forecast the 2006 House and Senate Elections." *PS:*

      Political Science and Politics, 39(3): 863-866.

Brody, Richard and Lee Sigelman. 1983. "Presidential Popularity and Presidential Elections: An

      Update and Extension." *The Public Opinion Quarterly*. 47:325-328.

Cox, Gary W. and Jonathan N. Katz. 2002. *Elbridge Gerry's Salamander: The Electoral*

      Consequences of the Reapportionment Revolution. Cambridge: Cambridge University

      Press.

Caldeira, Gregory A. 2004. "Expert Judgments versus Statistical Models: Explanation versus

      Prediction." *Perspective on Politics* 2: 777-780.

Campbell, James E. 1997. "The Presidential Pulse and the 1994 Midterm Congressional

      Election." *The Journal of Politics*. 59: 830-857.

Erikson, Robert S. and Christopher Wlezien. 2008. "Are Political Markets Really Superior to

      Polls as Election Predictors?" Public Opinion Quarterly 72(2): 190-215.

Gaddie, Ronald Keith, Charles S. Bullock III and Scott E. Buchanan. 1999. "What is So Special

      About Special Elections?" *Legislative Studies Quarterly*. 24:103-112.

Jacobson, Gary C. 1987. *The Politics of Congressional Elections,* 2d ed. Boston: Little, Brown.

Jacobson, Gary C. 1989. "Strategic Politicians and the Dynamics of U.S. House Elections, 1946-

      1986." *American Political Science Review* 83: 773-793.

Jacobson, Gary C. 1990 "Does the Economy Matter in Midterm Elections." *American Journal of*

      Political Science 34: 400-404.

Jacobson, Gary C. and Samuel Kernell. 1983. Strategy and Choice in Congressional Elections. New Haven: Yale University Press.

Kincaid, Diane D. 1978. "Over His Dead Body: A Positive Perspective on Widows in the U. S. Congress." *The Western Political Quarterly*, 31(1): 96-104.

Kramer, Gerald H. 1971. "Short-Term Fluctuations in U.S. Voting Behavior." *American Political Science Review* 65: 131-143.

Lewis-Beck, Michael S. and Tom Rice. 1992. *Forecasting Elections.* Washington D.C.: CQ Press.

Lewis-Beck, Michael S. and Mary Stegmaier. 2000. "Economic Determinants of Electoral Outcomes." *Annual Review of Political Science*. 3: 183-219.

Oppenheimer, Bruce I., James A. Stimson, and Richard W. Waterman. 1986. "Interpreting U.S. Congressional Elections: The Exposure Thesis." *Legislative Studies Quarterly* 11: 227-47.

Solowiej, Lisa and Thomas L. Brunell. 2003. "The Entrance of Women to the U.S. Congress: The Widow Effect." *Political Research Quarterly* 56(3): 283-292.

Tufte, Edward R. 1975. "Determinants of the Outcomes of Midterm Congressional Elections." *American Political Science Review* 69: 812-826.

Tufte, Edward R. 1978. *Political Control of the Economy.* Princeton: Princeton University Press.

Wolfers, Justin, and Eric Zitzewitz. 2004. "Prediction Markets." Journal of Economic Perspectives 18(Spring): 103-126.

Figure 1: The Frequency of Special Elections 1900-2008
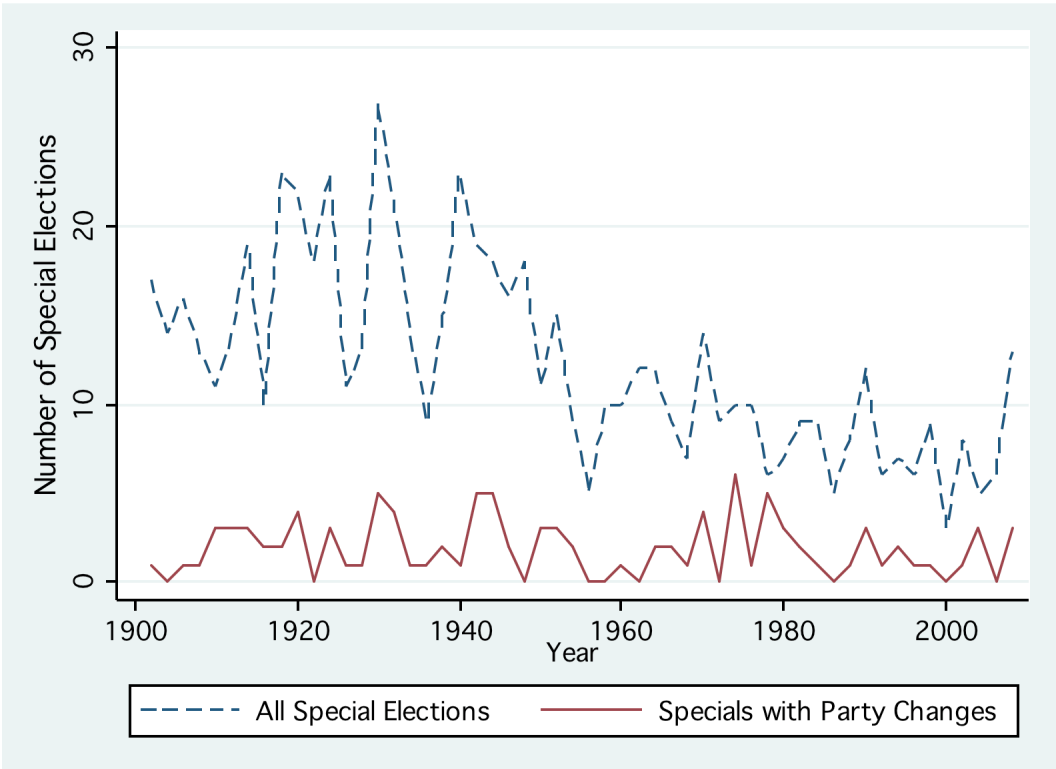
*The line plots the number of special elections prior to each general election. Thus the data point for 2008 is the number of

special elections that happened after the 2006 general election and prior to the 2008 general election.

Figure 2: Predictive Power of Special Elections on the Following General Election: 1900-2006

U.S. House of Representatives
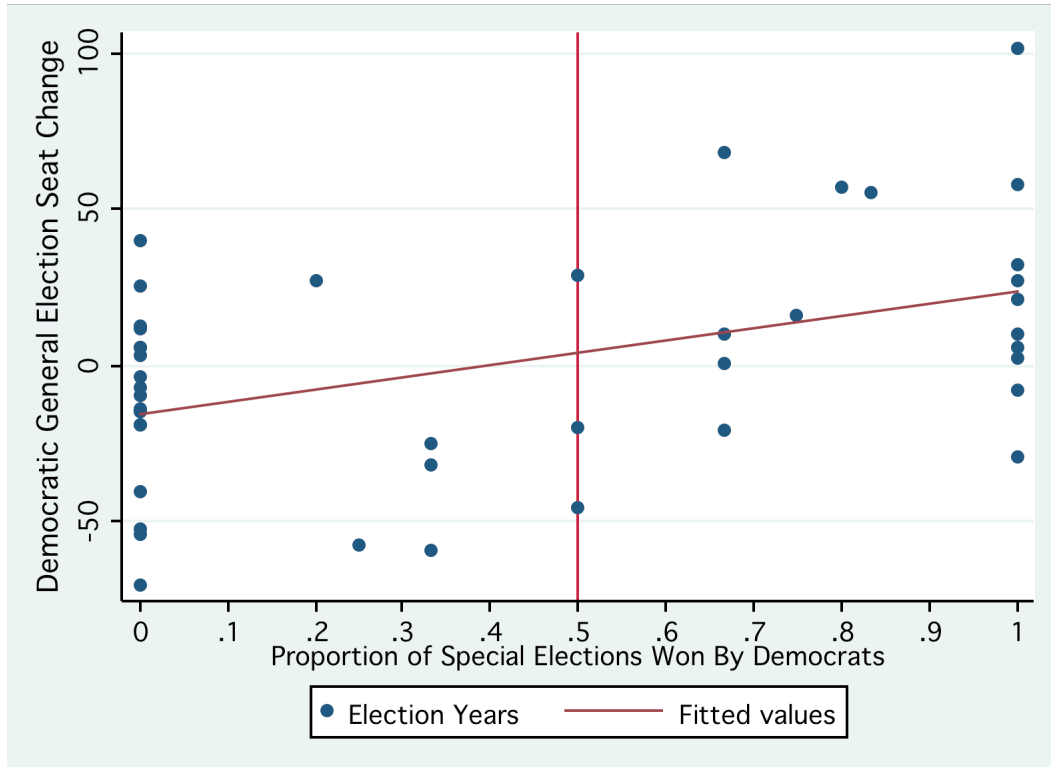
* The dependent variable is the number of seats gained or lost by the Democratic Party in each general election in the House of Representatives from 1900-2008. The independent variable is the proportion of seats taken away from the Republicans by the Democrats in all special elections that result in a change in party control.

Table 1a. Relationship between Winning More Special Elections and Gaining Seats in the

General Election

	Democrats Lose More Special Elections than Republicans	Democrats Win More Special Elections than Republicans	Total
Democrats Lose Seats in General Election	9 50.0%	14 42.42%	23 45.1%
Democrats Gain Seats in General Election	9 50.0%	19 57.58%	28 54.9%
Total	18	33	51 100%
Chi-squared (1 df)	.27		
p-value	.603		

*To construct this table we dichotomized aggregate special election outcomes and general election outcomes,

indicating whether the Democrats won or lost more special elections and won or lost seats in the general election.

The 8 observations in which the Democrats and Republicans won the same number of special elections are omitted.

Table 1b. Relationship between Gaining Seats in Special Elections and Gaining Seats in the

General Election

	Democrats Lose Seats in Special Elections	Democrats Gain Seats in Special Elections	Total
Democrats Lose Seats in General Election	16 66.7%	3 17.65%	19 46.3%
Democrats Gain Seats in General Election	8 33.3%	14 82.35%	22 53.7%
Total	24	17	41 100%
Chi-squared (1 df)	9.61		
p-value	.002		

*To construct this table we dichotomized aggregate special election outcomes and general election outcomes,

indicating whether the Democrats gained or lost seats in these two sets of elections. The 18 observations that lead to

no net gain or loss during special elections are omitted.

Table 2. The Relationship Between All Special Elections and General Election Outcomes in the

House

	Model 1	Model 2	Model 3
All Specials (proportions)	11.84		
	(19.05)		
All Specials (raw difference)		0.71	
		(0.86)	
Vote Margin Difference			-83.67**
			(34.56)
Midterm Loss	-30.96***	-31.71***	-27.90***
	(4.90)	(5.04)	(4.73)
Presidential Coattails	3.09***	3.04***	3.031***
	(0.62)	(0.63)	(.591)
Constant	-3.27	2.30	7.81*
	(10.98)	(3.61)	(3.78)
N	54	54	54
RMSE	25.2	25.1	23.8
R^2	.57	.57	.61

Note: *p<.05, **p<.01, ***p<.001 (one-tailed tests)

Entries are unstandardized regression coefficients with standard errors in parentheses. The dependent variable is the

number of seats gained or lost by the Democratic Party in each general election in the House of Representatives

from 1900-2008. All Special (proportions) is calculated by taking the proportion of all special elections won by

Democratic candidates. The All Special (raw differences) is the raw number of seats won or lost by Democrats.

Vote Margin Difference compares the vote margin between the first and second place finisher in the special election

and compares it to the outcome in that district from the most recent general election (see footnote 5 for a full

explanation). The Midterm loss takes on values of 1 when it is a midterm election with a Democratic president, -1

when it is a midterm election and a Republican holds the White House, and 0 for on-year elections. Presidential

Coattails is operationalized by taking the Democratic presidential candidate's percentage of the two-party vote and

subtracting 50, to center it around zero; the variable is coded zero for midterm elections.

Table 3. The Relationship Between Special Elections With Seat Changes and General Election Outcomes in the House

	Model 1	Model 2	Model 3
Specials with Seat Change (proportions)	14.77*		
	(8.38)		
Specials with Seat Change (raw difference)		6.37**	
		(1.91)	
Vote Margin Difference			-26.18*
			(15.49)
Midterm Loss	-28.95***	-23.03***	-28.29***
	(4.81)	(4.94)	(4.92)
Presidential Coattails	3.07***	3.00***	3.07***
	(.605)	(0.56)	(0.61)
Constant	-1.64	4.86	4.42
	(4.34)	(3.16)	(3.43)
N	54	54	54
RMSE	24.5	22.8	25.5
R^2	.59	.64	.59

Note: *$p<.05$, **$p<.01$, ***$p<.001$ (one-tailed tests)

Entries are unstandardized regression coefficients with standard errors in parentheses. The dependent variable is the number of seats gained or lost by the Democratic Party in each general election in the House of Representatives from 1900-2008. All Special Elections are calculated by taking the proportion of all special elections won by Democratic candidates. The Special with Seat Changes variable is the raw number of seats won or lost by Democrats from all special elections that resulted in a change of party control. Vote Margin Difference compares the vote margin between the first and second place finisher in the special election and compares it to the outcome in that district from the most recent general election (see footnote 5 for a full explanation). There are 10 election cycles in which there are no partisan seat changes, for those years this variable is coded as 0. The Midterm Loss takes on values of 1 when it is a midterm election with a Democratic president, -1 when it is a midterm election and a Republican holds the White House, and 0 for on-year elections. Presidential Coattails is operationalized by taking the Democratic presidential candidate's percentage of the two-party vote and subtracting 50, to center it around zero; the variable is coded zero for midterm elections.

[1] "Foster takes seat from GOP" by James Kimberly. Chicago Tribune, March 9, 2008.

[2] Lewis-Beck and Rice (1992) find that "for presidential years the correlation between income growth and seat change is r = .89, for midterms it is r = .38" (64).

[3] More specifically, we took the difference between the total proportion of the vote for the first place finisher and the second place finisher in the special election and, in order to make it comparable to the vote in the district from the previous general election, which was coded as the Democratic proportion of the two-party vote, we had to subtract the difference from 1 if a Republican won the election with more than 50 percent of the vote; subtract the difference from .5 if a Republican won the election and with less than 50 percent of the vote; add the difference to .5 if a Democrat won the election with less than 50 percent of the vote; do nothing to the difference if a Democrat won with more than 50 percent of the vote. Then these numbers are subtracted from the most recent general election outcome, and then averaged over each election cycle (out unit of analysis is the general election). This process yields large positive values for a big Republican gain in the special election, and large negative values for a big Democratic gain in the special election. Therefore, we expect the coefficient on this variable to take on a negative value.

[4] We tried various different ways of operationalization how well candidates from the two parties do in special elections. First, we experimented with a combination of the two variables in Models 1 and 2 in Table 3 by multiplying them together. This variable is also positive and statistically significant when put on the right hand side of the equation. We also tested the possibility that special elections that occur later in the cycle are even more highly correlated with general election outcomes. To do this we dropped all special elections that occurred in the first year after a general election. The aggregate results are virtually identical to those in Table 3 (results omitted). Thus, we conclude that the information from all special elections is just as reliable as the information from those that are held in the second half of the cycle.

---

[5] One instance in which the election did have an incumbent is when Phil Gramm resigned from his House seat that he won as a Democrat only to win it back in a special election as a Republican.