A regression discontinuity design analysis of the incumbency advantage and tenure in the U.S. House

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1. Introduction

Incumbency advantage is one of the most studied aspects of American politics (e.g., Erikson, 1971; Payne, 1980; Alford and Hibbing, 1981; Alford and Brady, 1988; King and Gelman, 1991; Cox and Morgenstern, 1993; Cox and Katz, 1996; Levitt and Wolfram, 1997; Erikson and Palfrey, 1998; Ansolabehere and Snyder, 2002). Because of the great interest in the incumbency advantage, a variety of techniques have been proposed to estimate the size of that advantage (e.g., Erikson, 1971; Garand and Gross, 1984; Alford and Brady, 1988; Gelman and King, 1990; Lee, 2008). While many of these techniques provide rigorous measures of the average incumbency advantage, they usually treat incumbents as an undifferentiated mass and so potentially miss important variation that exists among incumbents.

Since the incumbency advantage can help explain such things as candidate competition, election cycles, and even candidate positions (Groseclose, 2001) it is important to know whether the effect varies systematically with tenure. Theoretically tenure should matter since members with more seniority are likely to have more political clout and better committee assignments, which in turn help members provide better constituency service and target more spending to their own district.

In this paper, I test whether tenure affects the incumbency advantage by using the regression discontinuity (RD) approach to estimate the difference between freshmen and non-freshmen incumbents in terms of their general election vote share. The results show that compared to non-freshmen incumbents that barely won the last election, freshmen incumbents that barely won get 2.3 percentage points more in the next election. Further results suggest that the ability to deter high quality challengers is an important source of that advantage.
advantage: the likelihood of being challenged by a quality candidate and the amount of money raised (e.g., Cox and Katz, 1996; Levitt and Wolfram, 1997). The results of the analyses show that while freshmen and non-freshmen do not differ in terms of the amount of funds raised, there are significant differences in their ability to deter quality challengers. These results are strongly suggestive that a large portion of the incumbency advantage can be explained by the ability of incumbents to deter high quality challengers but casts serious doubt on Levitt and Wolfram’s claim that increases in fund raising by incumbents can explain the deterrence of quality challengers (and hence the incumbency advantage).

2. Previous research comparing the incumbency advantage by tenure level

I am not the first to note that there might be a difference among incumbents depending on their level of tenure. Erikson (1972), Born (1979), and Alford and Hibbing (1981) all note this distinction when discussing the increased incumbency advantage in the House (see also Cover, 1980). In each case, the author(s) estimate the effect of tenure on the incumbency advantage by simply looking at the average vote share of incumbents by tenure level. Dawes and Bacot (1998) follow the same approach in updating Alford and Hibbing’s (1981) work for the period 1980–1996.

For purposes of comparison with the results of this study, Tables 2–4 in Alford and Hibbing (1981) and Table 2 in Dawes and Bacot (1998) break down the average vote shares across tenure levels for three distinct time periods: 1946–1964, 1966–1978, and 1980–1996. Since these tables break down the average vote share by tenure levels they are not directly comparable to the study here, which instead compares freshmen and non-freshmen incumbents. However, we can find the lower bound for the effect of being a non-freshman incumbent based on these early studies by looking at the differences they report between first- and second-term incumbents. The average vote share difference between first-term and second-term incumbents is 3.5 percentage points during the 1946–1964 period, 2.5 percentage points during the 1966–1978 period, and 4 percentage points for the period 1980–1996. Thus the difference ranges between 2.5 and 4 percentage points. Further keep in mind that this is a lower bound of the estimate between freshmen and non-freshmen incumbents; the reported effects between first year incumbents and incumbents serving in their third-or-higher term are as large as 7 or 8 percentage points.

While, as discussed above, the previous work comparing the incumbency advantage by length of tenure has generally done so by comparing simple vote averages, the recent work by Gowrisankaran et al. (2008) is an exception to that rule. Gowrisankaran, Mitchell, and Moro approach the issue of estimating the effect of tenure by assuming and then estimating a dynamic structural model about how voters make decisions. While their work is good and an improvement over the existing literature there are two reasons to revisit this question. First, to recover the estimates Gowrisankaran, Mitchell, and Moro make a number of assumptions about how voters make decisions. The advantage of this paper is that I avoid making those types of assumptions by using a natural experiment to identify comparable incumbents who differ in terms of the length of tenure. Second, Gowrisankaran, Mitchell, and Moro do not recover (or at least do not report) many of the parameters we care about in regards to incumbency advantage including the estimated effect on vote share.2

Finally, besides using a new methodological approach, this work differs from the previous studies looking at the relationship between tenure and the incumbency advantage by looking at additional facets of that relationship. With the exception of Gowrisankaran et al. (2008), the previous studies cited above only look at the vote share when comparing incumbents of differing tenure levels. This work differs by also looking at the likelihood they face a quality challenger and the amount of money they raise.

3. Research design

This paper uses a regression discontinuity (RD) design to investigate the differences between freshmen and non-freshmen incumbents. Recently a number of papers have used this method to get leverage on questions relevant to political science (e.g., Lee et al., 2004; Butler and Butler, 2006; Lee, 2008; Hainmueller and Kern, 2008; Berry and Anzia, 2007). In this section I briefly discuss the key intuition needed to understand the RD design methodology; readers interested in a more complete overview are directed to Butler and Butler (2006) and Imbens and Lemieux (2007).

The key feature of a basic RD design is that assignment into the treatment status is based on passing some preset threshold on a continuous selection variable that is observed by the researcher. Under the assumption of random assignment of the treatment in the neighborhood of the threshold, the researcher can compare the observations just above the threshold to those just below it to estimate the effect of receiving the treatment. In other words, those observations which just barely missed passing the threshold, and therefore failed to receive the treatment, provide the counterfactual for those observations which barely passed the threshold and received the treatment because on average the only difference between the two groups is that one received the treatment and the other did not.

This paper uses the RD design methodology to make comparisons between freshmen and non-freshmen incumbents. To make that comparison, I use the two-party vote share of the incumbent in the previous election as the selection variable. The basic idea is that when the incumbent gets less than 50 percent of the vote he or she loses and there is a new incumbent who is a freshmen member; when the incumbent gets more than 50 percent of the vote, he or she continues to hold office and is, by definition,
a non-freshmen member. By using the discontinuity created by whether the incumbent during the previous period barely won or lost, I am able to get experiment-like estimates of the difference between freshmen and non-freshmen members of Congress.

Note that this approach differs from the more common sophomore surge procedure that compares the election percentage between the first and second elections of the same incumbent. In this case, I compare the election results across different incumbents who barely won the previous election. Because all of the incumbents barely won their previous race, there should be no differences, on average, between the treatment and control groups except in terms of the treatment itself. In this case the treatment is whether the incumbent is a freshman or not. I am able to compare freshmen to non-freshmen incumbents by comparing freshmen incumbents who are in their second election to non-freshmen incumbents who are in their third-or-more election. A more complete discussion comparing freshmen incumbents who are in their second election to non-freshmen incumbents by comparing freshmen incumbents who are in their second election to non-freshmen incumbents who are in their third-or-more election. A more complete discussion comparing regression discontinuity approach to other ways of estimating the incumbency advantage is given in Appendix B of Lee (2008).

In Section 5, I follow the lead of Lee et al. (2004) by estimating the difference between freshmen and non-freshmen incumbents in two ways. First, I do a non-parametric comparison – just comparing the means – for the sample of observations close to the threshold. Second, I use a fourth-order polynomial on both sides of the threshold to fit the relationship between the incumbent’s vote share in the previous election and the outcomes for the current incumbent. I then take the difference between the expected values for the control and treatment groups at the threshold. Note that in both cases I am recovering the estimates by assuming equal tenure effects for those beyond their first term. I do not estimate separate tenure effects for those with higher terms of service, though this would be extremely interesting, because the data are too sparse to do so with any degree of confidence.

Before discussing the data and empirical results, it is worth noting that the RD design methodology only identifies the local average treatment effect. In this study that means that I am only estimating the effect of being a non-freshmen incumbent for those incumbents who barely won their previous election. For this particular study that feature of RD designs is not necessarily a weakness since it is these vulnerable incumbents where the incumbency advantage, and associated factors, are most likely to actually have an impact on the results. Thus although we are not able to make inferences about the whole population, we are able to make inferences about the population most important for understanding change in partisan control of seats: vulnerable incumbents.

4. Data for RD design analyses

In order to compare the freshmen to non-freshmen members I used data on the two-party vote share in the House races, the amount of campaign funds raised by the incumbents, and whether or not the incumbents faced a quality challenger. The data on the election results and the quality of challengers cover the period 1946–2004; the campaign finance data cover the period 1980–2004.

For the analyses, I restrict the sample in the following ways. First, I only include those observations where an incumbent is running in the current election. The open seat races are excluded since they are uninformative about the differences between freshmen and non-freshmen incumbents. Second, I also exclude the observations where the seat was open in the previous election because the selection variable used in the design is the incumbent’s vote share in the previous election, which requires having an incumbent in that election. Third, I exclude redistricted incumbents from the analysis. Fourth, I exclude the few observations where there is a third-party incumbent. Fifth, I exclude those observations where the incumbent ran unopposed by a candidate from the other major party in the previous election.

Remember that this note is interested in comparing freshmen and non-freshmen incumbents. So for this RD design the treatment I am interested in is whether or not this is the incumbent’s first term in Congress. The selection variable for this treatment, and subsequently for the analyses, is the incumbent’s two-party vote share in the previous election, with the treatment threshold equal to 50 percent. In other words, I am looking at the differences in outcomes between freshmen and non-freshmen incumbents in the elections at time period $t$ and it is the incumbent’s vote share in the election at time period $t+1$ that determines whether the incumbent is a freshman or not. In particular, when the incumbent’s prevous vote share (i.e., at time $t-1$) is less than 50 percent, a new incumbent comes into office (i.e., the new incumbent is a freshmen); if, however, the incumbent gets more than 50 percent in the election she continues to hold office (i.e., there is a non-freshmen incumbent).

As noted above, I used this general design to analyze three outcomes. Here I describe the coding for each of these outcomes.

4.1. Incumbent two-party vote share at time $t$

This outcome is measured by taking the incumbent’s share of the votes for the two major parties. Looking at the
incumbents’ vote share allows us to test whether non-freshmen incumbents enjoy a higher level of incumbency advantage relative to freshmen incumbents. In other words, I am not testing the absolute incumbency advantage for the two groups, but rather the difference between the two groups’ incumbency advantage such that positive (negative) values indicate that non-freshmen House members enjoy a higher (lower) incumbency advantage than freshmen members.

4.2. Challenger quality

Since previous work suggests that a very important source of the incumbency advantage is the ability of incumbents to deter quality challengers (Cox and Katz, 1996; Levitt and Wolfram, 1997), I test whether freshmen and non-freshmen incumbents differ in their ability to deter quality challengers. To measure the quality of the challenger, I follow the convention of coding candidate quality as a binary variable that takes a value of 1 when the challenger has “prior officeholding experience” (Jacobson and Kernell, 1981: p. 30). Positive (negative) values in the analysis for this outcome indicate that non-freshmen are more (less) likely to face a quality challenger than freshmen incumbents are.

4.3. Total receipts

Finally, I compare freshmen and non-freshmen incumbents in terms of the total receipts of the money they receive. The reported results in the next section are based on using total receipts measured in increments of a thousand dollars that have been adjusted for inflation with the year 2000 being used as the baseline. Again, positive (negative) values for the estimate in the analysis of this outcome indicate that non-freshmen raise more (less) money than their freshmen counterparts.

5. Empirical results: freshmen vs. non-freshmen members

Using the data and RD design methodology described in the previous sections, I estimated the difference between freshmen and non-freshmen incumbents for each of the three outcomes; the results of the estimation are presented in Table 1. For each of the three outcomes I present both a non-parametric and parametric estimate. The non-parametric results come from taking the difference in means between freshmen and non-freshmen incumbents for those observations within 2.5 percentage points of the treatment threshold. In other words, I restrict the sample to those observations where the vote share of the incumbent in the previous election was between 47.5 percent and 52.5 percent and then take the difference in means between the freshmen incumbents (i.e., those from districts where the previous vote share was between 47.5 and 50 percent) and non-freshmen incumbents (i.e., those from districts where the vote share, their vote share, was between 50 and 52.5 percent). The parametric estimate is based on using a polynomial to estimate the difference in predicted values of the outcomes at the treatment threshold between freshmen and non-freshmen incumbents (see Section 3 for further description).

The estimates in Table 1 give the relative level of the outcome variables for the non-freshmen incumbents relative to the freshmen incumbents. In other words, the estimated differences given in the Table 1 can be interpreted as the predicted change in the outcomes when moving from being a freshmen incumbent to being a non-freshmen incumbent. For example, the estimated value 2.3 in column 1 for the outcome Incumbent Vote Share, indicates that compared to freshmen incumbents that barely won their last election, non-freshmen incumbents that barely won get 2.3 percentage points more in the next election.

While this effect is substantial it suggests that previous estimates may have overstated the importance of tenure for the incumbency advantage. As discussed in Section 2, the difference between first- and second-term incumbents reported in Alford and Hibbing (1981: Tables 2–4) and Dawes and Bacot (1998: Tables 2–4) ranged from between 2.5 and 4 percentage points. Further, it should be kept in mind that this is a lower bound of the estimate between freshmen and non-freshmen incumbents since the reported effects between first year incumbents and incumbents serving in their third-or-higher term was as large as 8 percentage points.

To be fair, these results do not conclusively show that previous estimates are wrong. Remember that the results in this paper give only the local average treatment effect for incumbents whose previous election was close. The previous estimates for the relative levels of incumbency advantage may be an accurate estimate of the incumbency advantage for all incumbents. Of course, if that is the case it further bolsters the point that there is important variation.

Table 1
Aspects of the incumbency advantage: freshmen vs. non-freshmen members of the U.S. House.

<table>
<thead>
<tr>
<th></th>
<th>Incumbent vote share</th>
<th>Quality challenger</th>
<th>Total receipts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-parametric</td>
<td>Polynomial</td>
<td>Non-parametric</td>
</tr>
<tr>
<td>Estimated difference</td>
<td>2.3**</td>
<td>2.6</td>
<td>−0.25**</td>
</tr>
<tr>
<td>Std. error</td>
<td>0.8</td>
<td>2.1</td>
<td>0.05</td>
</tr>
<tr>
<td>T-stat</td>
<td>2.96</td>
<td>1.24</td>
<td>−5.45</td>
</tr>
<tr>
<td>N</td>
<td>445</td>
<td>4712</td>
<td>439</td>
</tr>
</tbody>
</table>

**Significant at the 0.01 level; *Significant at the 0.05 level. The estimated difference indicates what would happen to the outcome if, ceteris paribus, a freshmen incumbent was changed to a non-freshmen incumbent. The three outcomes are the incumbent vote share (the measure of incumbency advantage), the quality of the challenger (coded as 1 = challenger held previous elected office, 0 = challenger did not hold elected office previously), and total receipts (the total campaign funds raised by the candidate). Total receipts are adjusted for inflation and represent thousands of dollars in levels for the year 2000. The number of observations is significantly lower for Total Receipts because it is only available starting in 1980.
in the incumbency advantage among incumbents. It would mean that in addition to differences between freshmen and non-freshmen incumbents that are vulnerable (i.e. the results from this study), there must also be important differences between vulnerable and non-vulnerable incumbents as well.

Even if the true effect of tenure on the incumbency advantage is only 2.3 percentage points, that advantage is still significant. We can put the size of this effect into perspective by comparing it to the results of Lee (2008) who uses a RD design to show that the average party incumbency advantage in the House is between 7 and 8 percentage points. Thus the personal incumbency advantage difference between incumbents, 2.3 percentage points, represents about 30 percent of the average estimated party incumbency effect. In other words, there is significant variation among incumbents in terms of the incumbency advantage they enjoy, with non-freshmen incumbents enjoying a much larger advantage.

Another way of seeing the importance of the estimated 2.3 percentage-point difference between freshmen and non-freshmen incumbents is by looking at the number of races that were actually decided by a margin of that size. In the data set used for this study there were 1634 first-term incumbents who ran for reelection. Among those 1634 freshmen incumbents, 105 of them, 6.4 percent, lost their race by 2.3 percentage points or less. If those freshmen incumbents enjoyed an incumbency advantage as large as the advantage enjoyed by their more senior colleagues, they would not have lost. On the flip side, of the 7334 non-freshmen incumbents running for reelection in the data set, 224 of them, 3.1 percent, won their race by 2.3 percentage points or less. If they had the lower incumbency advantage of their junior colleagues they would have lost their races. Thus between 1946 and 2004 there were 339 races that would have, in expectation, turned out differently had the incumbents involved had the level of incumbency advantage enjoyed by their freshmen/non-freshmen counterparts.

The other results in Table 1 give some indication about what might be the source of the extra advantage that non-freshmen incumbents enjoy. In particular, the results show that while freshmen and non-freshmen do not differ in terms of the total money raised, they do differ significantly in their ability to deter quality challengers. In terms of the money raised by incumbents (total receipts), not only is the estimated difference between freshmen and non-freshmen statistically insignificant, but it is actually negative. The negative sign on the estimates implies that freshmen incumbents raise more than their non-freshmen counterparts. Thus despite raising more money (or at least as much money) as non-freshmen members of the House, freshmen members do worse at the polls. Part of the explanation for this conundrum is the difference between the two groups in their ability to deter quality challengers.

The results of Table 1 show that the likelihood that non-freshmen incumbents face a quality challenger is about 25 percentage points lower than the probability that freshmen incumbents face a quality challenger. We can put the size of this effect into perspective by comparing it to the results from Goodliffe (2001). As part of his analysis Goodliffe reports how the expected probability of a high quality challenger changes with a number of factors including the size of the incumbents’ war chest, the incumbent’s previous vote, etc. (see Table 3). One of the variables is the effect of increasing tenure by 10 years. The estimated effect of doing so is only a 4 percentage-point drop in the likelihood of facing a high quality challenger, which suggests that tenure is not very important in deterring challengers. However, the results suggest that tenure, at least in terms of getting past ones first term in office, has a much larger effect on deterring quality challengers.

Indeed the results suggest that effect of getting past one’s first term in office is one of the most important deterrents to quality challengers. By comparison, the largest change that Goodliffe reports in the predicted probability that a high quality candidate challenges an incumbent is a 13 percentage point drop that occurs when increasing the incumbent’s vote share in the previous election by 10 percentage points for incumbents who faced a high quality candidate in the previous election. This implies that in terms of deterring high quality challengers, the difference between being a freshman and a non-freshman incumbent is close to double the size of the effect of increasing an incumbent’s vote share by 10 percentage points. Clearly, getting past one’s sophomore election has a huge effect on an incumbent’s subsequent ability to deter high quality challengers.

Finally the results here are consistent with the earlier findings of Cox and Katz (1996) and Levitt and Wolfram (1997) that a large portion of the incumbency advantage can be explained by the ability of incumbents to deter high quality challengers. Further the results shed some light on the question of what might, or rather might not, be helping incumbents deter high quality challengers. In particular, Levitt and Wolfram suggest that “the dramatic increase in campaign spending, which has more than doubled in real terms over the last two decades, is the most likely source of the decline in high quality challengers” (57). This explanation seems unlikely since non-freshmen incumbents enjoy a 2.3 percentage point higher incumbency advantage relative to freshmen incumbents despite the fact that there is no difference in their ability to raise funds. While the results do not show what are the factor(s) deterring high quality challengers, they do suggest that we look for the answer somewhere other than in campaign financing.

6. Conclusions

As noted in the introduction, most measures of incumbency advantage lump all incumbents together in order to estimate the average incumbency advantage. The results here confirmed earlier studies suggesting that there is important variation across incumbents in terms of their incumbency advantage (Erikson, 1972; Alford and Hibbing, 1981; Dawes and Bacot, 1998) although the effect is smaller than previous studies would suggest. In particular, I found, by looking at incumbents who barely won their races, that the incumbency advantage for non-freshmen incumbents is about 2.3 percentage points higher than it is for freshmen incumbents. Since this effect represents a difference of
about 30 percent of the overall average incumbency effect, this suggests that there is significant variation that is not captured in simple average measures of the incumbency advantage.

As to the source of the higher incumbency advantage for non-freshmen members, the findings in this study suggest that part of that extra advantage comes from non-freshmen members’ greater ability to deter quality challengers. There is about a 25 percentage points difference between freshmen and non-freshmen in terms of the likelihood that they face a high quality challenger. Besides explaining why non-freshmen might enjoy a higher incumbency advantage, these results have practical implications for elections. In particular, this finding means that in the aftermath of elections that bring a wave of new incumbents from one party into office (e.g., 1994 and 2006), we are likely to see the opposing side mobilize to provide a high quality challenge in the following election.

References


