Incumbency Advantage in Irish Elections: A Regression Discontinuity Analysis

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Abstract:

This paper exploits the quasi-experimental features of the system of proportional representation with a single transferable vote (PR-STV) to estimate incumbency advantage in Dail Eireann. In very close elections, where there is a narrow margin of victory, it is likely that bare winners are comparable in their unobservable characteristics to bare losers. The regression discontinuity analysis indicates that incumbency causes an increase in the probability that a candidate is successful in a subsequent election. The magnitude of this increase is in the order of 0.18. We also find evidence that incumbency acts as a significant barrier to the re-entry of challengers. Bare winners are twenty percentage points more likely to rerun in a subsequent election compared to bare losers. In testing for heterogeneity of the incumbency effect within parties, we find that the Fine Gael candidates enjoy the largest incumbency advantage.

Keywords: incumbency advantage, regression discontinuity, non-parametric, Irish elections, proportional representation

1. Introduction

During the period 1927-97 incumbent members of Ireland's Lower House (Dail Eireann) were re-elected, on average, 81.9 percent of the time. This rate of incumbent re-election is amongst the highest in the world. Matland and Studlar (2004) compares re-election rates across twenty five democracies over the period 1979-1994 and find that Ireland has the fourth highest rate of incumbent re-election[*]. Inordinately high re-election rates can give rise to concerns that incumbency conveys some unfair advantage on incumbents versus challengers (Lee, 2008). Using election data from 1937-2011, this paper estimates the incumbency advantage in Ireland's proportional electoral system.

Incumbency advantage can be thought of as having a direct and an indirect effect (Cox and Katz, 1996; Levitt and Wolfram 1997). The direct effect comes from the extra resources and perquisites of office which an incumbent has at her disposal. These resources can be used by an incumbent to improve her future electoral prospects. The indirect effect refers to the ability of an incumbent to deter or "scare off" high quality challengers. If a potential challenger knows that the incumbent can take advantage of direct officeholder benefits, then that challenger may decide not to run against the incumbent. This is of particular relevance for high quality challengers who have a high opportunity cost of their time.

The main difficulty in empirically estimating incumbency advantage is omitted variable bias. The multidimensional aspects of a candidate's quality (such as charisma, intelligence etc.) cannot be perfectly observed and quantified (Levitt, 1994). If we simply regress a candidate's vote share on an incumbency indicator without controlling for unobservable characteristics, then the resulting estimate of incumbency advantage may be biased. If higher quality candidates are more likely to become incumbents, then the estimate will be biased upwards. In order to overcome this problem, a regression discontinuity design (RDD) is used.

[*] The three countries which are ranked higher than Ireland in terms of incumbent re-election rates are the United States (1st), Australia (2nd) and West Germany (3rd).

We focus on very close elections which involve bare winners and bare losers. These bare winners and bare losers are assumed to be comparable in their unobservable characteristics. As such, their subsequent electoral outcomes are used to identify the causal effect of incumbency. We also test for heterogeneity in the incumbency advantage by estimating the effect separately for different political parties.

Up to now, the study of incumbency advantage has primarily focused on plurality electoral systems (Erikson, 1971; Alford and Brady, 1988; Gelman and King, 1990; Cox and Katz, 1996; Levitt and Wolfram, 1997; Jacobson, 1997, Ansolabehere and Snyder, 2002). Early studies utilised two main empirical strategies, the sophomore surge and the retirement slump. The sophomore surge method looks at the difference in vote shares between the first and second terms for winning challengers and the retirement slump uses the difference between vote shares of retiring incumbents and their freshmen successors. However both methods produce biased estimates (see Gelman and King, 1990). Levitt and Wolfram (1997) attempt to control for unobservables by using repeat challengers to estimate the direct effect of incumbency. However, this method is prone to sample selection bias and may be subject to small sample size.

In a seminal paper by Lee (2008), a regression discontinuity design (RDD) was used to estimate the causal effect of incumbency in U.S. House elections. The results suggest that incumbency has a significant causal effect on the probability that a candidate will run for office and succeed in the next election. The incumbency effect is in the order of 0.45. Lee's pioneering work in applying RDD to estimate incumbency advantage has since been emulated in several subsequent works which test for incumbency advantage in plurality systems (for example Hainmueller and Kern, 2008; Eggers and Hainmueller, 2009; Uppal, 2009 & 2010; Trounstine, 2011). To our knowledge, Liang (2011) is the only other paper which uses an RDD to test for incumbency advantage in a proportional system.

Caughey and Sekhon (2011) call into question the validity of the RDD in estimating incumbency advantage in U.S. House elections. It is shown that the fundamental assumption underlying the RDD, that bare winners are comparable to bare losers, may not be entirely valid. The results suggest that in very close elections, bare winners and bare losers often differ in certain pre-treatment covariates. Caughey and Sekhon (2011) suggest that the reason these differences are not picked up by papers such as Lee (2008), is an over reliance on parametric techniques to test for continuity at the threshold. These parametric techniques extrapolate using data far away from the threshold and as such may not detect covariate imbalance. In this paper we take account of the pitfalls which are pointed out by Caughey and Sekhon (2011) and exercise the appropriate caution when testing for discontinuities in pre-treatment covariates.

The rest of the paper proceeds as follows. Section 2 describes the electoral setting in Ireland. The RDD methodology is discussed in Section 3, Section 4 presents the dataset and Section 5 shows the results. Robustness and validity of the RD design is discussed in Section 6 and Section 7.

2. The Irish Electoral Setting

Ireland uses a system of Proportional Representation – Single Transferable Vote (PR-STV). This is a candidate based, multi-seat system where voters can vote for several candidates in order of their preferences. The ballot paper lists candidates along with their party affiliation and the voter places a "1" beside his most preferred candidate, a "2" beside his second preference and the process continues for third, fourth preferences etc.

The first step is to count how many first preference votes each candidate gets. A quota is then calculated by dividing the total number of valid votes by the number of available seats plus one. If a candidate's first preference votes exceed the quota, that candidate is declared

elected. Any surplus votes in excess of the quota are then distributed among the remaining candidates and included in a second vote count. The distribution of votes from an elected candidate A to another candidate B is based on the following calculation,

$$\frac{(\text{number of A's surplus votes}) \times (\text{number of A's votes containing a next preference for B})}{\text{total number of A's votes that contain a next preference}}$$ *

If B reaches the quota after receiving transfers from A, then B is declared elected. Any surplus votes from B will then be used in a third count if necessary. It is extremely rare for all seats to be filled on first preferences meaning that virtually all elections involve multiple counts.

Following a count, if no candidate has a surplus of votes then the least voted candidate is eliminated and her next preference votes are distributed among the remaining candidates. This process of vote transfers continues until all seats in the constituency have been filled.

In the PR-STV system, candidates from the same party are in open competition with one another as well as competing with rivals from other parties. This creates an incentive for candidates to identify themselves as separate from their parties by developing a local, personal following (Marsh et al, 2008). Incumbents often devote a large proportion of their time dealing with local issues in order to raise their profile and recognition.

Elections to Dail Eireann are required by law to be held at least once every five years. In reality, elections tend to be held on a more frequent basis. In the dataset, an election is held on average once every 3.3 years. The country is divided up into different districts which are called constituencies. Each constituency will elect either three, four or five Deputies who will represent that constituency in Dail Eireann. There is an average of 40 constituencies over the period covered by the dataset. The number of constituencies changes slightly over time due to re-districting. It is required that constituencies are revised at least once every twelve years.

* If a candidate is elected on first preferences, all of her votes are used in this calculation. However, if a candidate is elected on a lower count, only the surplus votes are used.

Table 1 summarizes every Irish election from 1937-2011. Fianna Fail has been the dominant party in Irish politics having achieved electoral success in 17 of the 23 elections. Fianna Gael, Labour and the Progressive Democrats have also enjoyed electoral success albeit to a lesser extent. Prior to the 1970's, Irish politics was characterized as being very stable with a high degree of electoral stagnation. Fianna Fail enjoyed two separate sixteen year periods of uninterrupted rule, one from 1932-1948 and one from 1957-1973. However from the 1970's onwards, Irish electoral politics became more competitive and volatile (Farrel, 1994). Of the eleven elections from 1973-2011, only one incumbent government was fully returned to power. Declining party attachment played a role in this increased competitiveness[*] as did the establishment of the Progressive Democrat party in the 1980's.

A notable feature of Irish politics is the consistently high re-election rates. Table 2 below shows the re-election rates at each general election from 1948-2007. The re-election rate has remained well above 80% for the majority of the elections with only four of the eighteen elections dipping below 80%. The election of 1997 is notable in that its re-election of rate of 72.9 percent is the lowest in the sample. This was largely attributable to a collapse in the labour party vote due to the party losing credibility having entered a coalition with Fianna Fail in 1992.

[*] Sinnott (1998) reports that by the mid 1990's party attachment in Ireland was the lowest of the twelve EU member states.

Table 1: Summary of Dail Eireann Elections and Ruling Governments (1948-2007)

Date of Election	Successful Party/Coalition	Number of Constituencies	Duration of Government	Re-election Rate (%)
July 1937	FF	34	351	75.4
June 1938	FF	34	1,832	85.3
June 1943	FF	34	342	79.2
May 1944	FF	34	1,345	86.6
February 1948	FG / L / CP / CT	40	1,211	84.1
May 1951	FF	40	1,084	82.3
May 1954	FG / L / CT	40	1,022	84.9
March 1957	FF	40	1,674	82.0
October 1961	FF	38	1,281	82.3
April 1965	FF	38	1,533	82.8
June 1969	FF	42	1,351	87.8
February 1973	FG / L	42	1,569	86.6
June 1977	FF	42	1,456	75.9
June 1981	FG / L	41	252	85.8
February 1982	FF	41	279	86.6
November 1982	FG / L	41	1,546	86.8
February 1987	FF	41	849	86.4
June 1989	FF / PD	41	1,259	82.7
November 1992	FF / L	41	1,654	81.3
June 1997	FF / PD	41	1,806	72.9
May 2002	FF / PD	41	1,788	77.3
May 2007	FF / G / PD	43	1,373	79.5
February 2011	FG / L	43	n/a	64.0

Abbreviations: Fianna Fail (FF), Fianna Gael (FG), Labour (L), Progressive Democrat (PD) Green Party (G), Clann na Poblachta (CP), Clann na Talmhan (CT)

3. Methodology

Regression Discontinuity (RD) designs can be used to evaluate the causal effect of receiving a treatment (Hahn et al., 2001; Imbens and Lemieux, 2007). Assignment to the treatment is determined by the value of a covariate (known as the forcing variable) being on either side of fixed threshold. In the case of elections, the treatment is the assignment of incumbency status. This is discontinuous at a certain vote attainment threshold. If a candidate exceeds this vote

threshold, that candidate will become the incumbent. On the other hand, if the candidate falls short of the threshold, incumbency is not achieved.

In a plurality system such as the United States the threshold is simply 50% of the vote share (as in Lee, 2008 and Uppal, 2010). Two candidates compete for a seat and the candidate receiving greater than 50% of the vote becomes the incumbent. We use a similar method to work out the vote threshold in Ireland's PR-STV system. As we are interested in examining closely fought contests, we look at candidates who contest the last available seat in a constituency (after all vote transfers have been made). One candidate will be successful and there will be one runner-up candidate who came closest to winning without actually doing so. The winner of the last seat is the "least voted winner" among the newly elected incumbents. The runner-up will be the "most voted loser" among all losing candidates. If candidate *j* and *k* are contesting the final seat, then incumbency status will be assigned to the candidate who achieves a greater than fifty percent share of the two candidate vote. The vote share for candidate *j* is calculated as follows,

$$\frac{Votes_j^{FinalCount}}{Votes_j^{FinalCount} + Votes_k^{FinalCount}} = Share_j$$

We define $I_{i,t+1}$ as an indicator of incumbency status at the next election such that,

$$I_{i,t+1} = \begin{cases} 1 & \text{if } Share_{i,t} > 0.5 \\ 0 & \text{if } Share_{i,t} < 0.5 \end{cases}$$

Having established the threshold at which incumbency status is assigned, we now turn to a formal motivation for using the RD methodology to estimate incumbency advantage. Consider the following probit regression,

$$Victory_{i,t+1} = \alpha + \beta . I_{i,t+1} + \varepsilon_{i,t+1}$$

Where $Victory_{i,t+1}$ equals one if candidate i elected at time $t+1$ and zero otherwise. $I_{i,t+1}$ is a dummy variable for incumbency which is defined above. Unobservable quality is likely to be correlated with incumbency status which means that $E[\varepsilon_{i,t+1} \mid I_{i,t+1}] \neq 0$. This leads to a biased estimate of the incumbency effect in which,

$$E[Victory_{i,t+1} \mid I_{i,t+1} = 1] - E[Victory_{i,t+1} \mid I_{i,t+1} = 0] = \beta + BIAS_{i,t+1}$$

Where $BIAS_{i,t+1}=E[\varepsilon_{i,t+1} \mid I_{i,t+1} = 1]–E[\varepsilon_{i,t+1} \mid I_{i,t+1} = 0]$. By examining very close elections, RD can virtually eliminate the bias. Close elections are ones in which the $Share_{i,t}$*'s* achieved by competing candidates occur in a very close neighbourhood around the incumbency threshold (of $Share_{i,t}=0.5$). By looking at data in an interval which is close to the threshold we get,

$$E[Victory_{i,t+1} \mid 1<Share_{i,t}\leq \eta] - E[Victory_{i,t+1} \mid \eta <Share_{i,t}<1] = \beta + BIAS^*_{i,t+1}$$

where η is some arbitrarily small number, and $BIAS_{i,t+1}=E[\varepsilon_{i,t+1} \mid 1<Share_{i,t}\leq \eta]–E[\varepsilon_{i,t+1} \mid \eta <Share_{i,t}<1]$. In the limit as $\eta\rightarrow 0$, the margin of votes separating the bare winner and bare loser becomes negligible. The assumption underpinning the RD methodology is that in these very close elections, the predetermined characteristics of the bare winners and bare losers are comparable. Therefore as $\eta\rightarrow 0$ the bias disappears and we are left with the true estimate of the incumbency effect,

$$\lim_{\eta\rightarrow 0} E[Victory_{i,t+1} \mid 1<Share_{i,t}\leq \eta] - \lim_{\eta\rightarrow 0} E[Victory_{i,t+1} \mid \eta <Share_{i,t}<1] = \beta$$

The electoral outcomes at time $t+1$ are estimated separately for those to the right of the threshold (bare winners) and those to the left of the threshold (bare losers),

$$VictoryL_{i,t+1} = \alpha_L + \beta . f_L(Share_{i,t} - 0.5) + \varepsilon_{i,t+1} \quad (1)$$

$$VictoryR_{i,t+1} = \alpha_R + \beta . f_R(Share_{i,t} - 0.5) + \varepsilon_{i,t+1} \quad (2)$$

Where $f_R(\cdot)$ and $f_L(\cdot)$ are polynomials in the forcing variable. It is necessary to model the forcing variable in this way as the conditional expectation function $E[Victory_{i,t+1} \mid Share_{i,t}]$

may be non-linear. Failure to do so could result in a non-linearity in the CEF being mistakenly identified as a discontinuity. For convenience, we subtract the threshold value (of 0.5) from the forcing variable in equations (1) and (2). This ensures that the incumbency effect at the threshold is equal to the intercept terms yielding an estimate of incumbency advantage equal to $\hat{\alpha}_R - \hat{\alpha}_L$.

An alternative to estimating two separate regressions for the winners and losers is to estimate one single "pooled" regression (Lee and Lemieux, 2009). The advantage of this is that it yields direct estimates and standard errors. The pooled regression is the following,

$$Victory_{i,t+1} = \alpha + \beta.I_{i,t+1} + \rho.f(Share_{i,t} - 0.5) + \lambda.I_{i,t+1}.f(Share_{i,t} - 0.5) + \varepsilon_{i,t+1} \qquad (3)$$

This specification includes interactions between the polynomial terms and the incumbency dummies. This is to capture any non-linearity which may arise from the interaction of the incumbency dummy with $Share_{i,t.}$

We verify the robustness of the parametric estimates using a non-parametric technique which does not impose a functional form on the CEF. We employ the method of local linear regression. For each data point we run a linear regression of the dependent variable on the forcing variable within an optimal bandwidth *h.* In general, for a data point $Share_{i,t}=x_0$, we estimate the following linear regression,

$$Victory_{i,t+1} = \alpha + \beta.(x_0 - 0.5) + \varepsilon_{i,t+1} \qquad \text{for } x_{i,t} \in \left[x_0 - \frac{h}{2},\ x_0 + \frac{h}{2} \right] \qquad (4)$$

The predicted value of equation (4) evaluated at x_0 yields the non-parametric estimate. To estimate the causal effect of incumbency, we compare the outcomes of bare winners and bare losers by estimating linear regressions within an optimal bandwidth *h* to the left and right of the threshold. When estimating boundary points we cannot mix treated and untreated data as this would invalidate the RD methodology. To the left of the threshold we run the following regression,

$$Victory_{L\,i,t+1} = \alpha_L + \beta.(Share_{i,t} - 0.5) + \varepsilon_{i,t+1} \qquad \text{for Share}_{i,t} \in [(0.5-h), 0.5) \qquad (5)$$

and to the right,

$$Victory_{R\,i,t+1} = \alpha_R + \beta.(Share_{i,t} - 0.5) + \varepsilon_{i,t+1} \qquad \text{for Share}_{i,t} \in [0.5, (0.5+h)] \qquad (6)$$

The intercepts give the predicted values at the threshold so that the causal effect of incumbency is given by $\hat{\alpha}_R - \hat{\alpha}_L$.. For convenience we combine equations (5) and (6) and estimate one single pooled equation. Using the bandwidth $\text{Share}_{i,t} \in [(0.5-h), (0.5+h)]$ we estimate the following regression,

$$Victory_{i,t+1} = \alpha + \beta.I_{i,t+1} + \rho.(Share_{i,t} - 0.5) + \lambda.I_{i,t+1}.(Share_{i,t} - 0.5) + \varepsilon_{i,t} \qquad (7)$$

In this regression, β is the estimate of incumbency advantage. Both approaches yield the same estimate such that $\beta = \hat{\alpha}_R - \hat{\alpha}_L$.

4. Data

The dataset consists of bare winners and bare losers of 882 constituency elections over the period 1937-2011. In a multi-seat constituency, the bare winner is the winner of the last available seat and the bare loser is the candidate that receives the highest number of votes among all defeated candidates. There are 1,764 observations; 882 bare winners and 882 bare losers. Fianna Fáil candidates account for 42 percent (n=743), Fine Gael candidates for 30 percent (n=536) and other candidates for 28 percent (n=485).

The RDD analysis compares bare winners and bare losers from election t on their subsequent electoral performance at time t+1. As such we use pairs of consecutive elections. The dependent variable uses data from 1938-2011 and the independent (forcing) variable uses data from 1937-2007.

5. Results

We quantify the direct effects of incumbency using three outcome measures for candidates at election *t+1*; the probability of running and winning, the number of first preference votes and the total votes received as a percentage of the quota. To provide an indication as to the indirect (deterrence) effect, we look at the candidate's probability of rerunning in election *t+1*. Figure 1 displays the results graphically and the corresponding estimates are shown in Table 1.

Incumbency causes an eighteen percentage point increase in a candidate's probability of running and winning in election *t+1*. Incumbents also receive approximately 1,200 more first preference votes and an extra sixteen percentage point share of the quota compared to non-incumbent counterparts with comparable characteristics. The results also point to a substantial deterrence effect of incumbency. The difference in the probability of rerunning at time t+1 between bare winners and bare losers is about twenty percentage points. This suggests that incumbency acts as a barrier against re-entry of high quality challengers.

Our estimates of incumbency advantage are of a smaller magnitude than those reported in RDD studies of the United States Congress. Uppal (2010) and Lee (2008) find that incumbency increases the probability of electoral success in the U.S. House by approximately thirty and forty percentage points respectively. Our results are more in line with Germany and UK elections where Hainmueller and Kern (2005) estimate the effect at twenty percentage points.

The estimates are robust to numerous specifications. Table XX of the appendix presents parametric estimates using second, third and fourth order polynomials as well as non-parametric estimates which vary the size and shape of the kernel. In all specifications the incumbency effects are significant and of a similar order of magnitude.

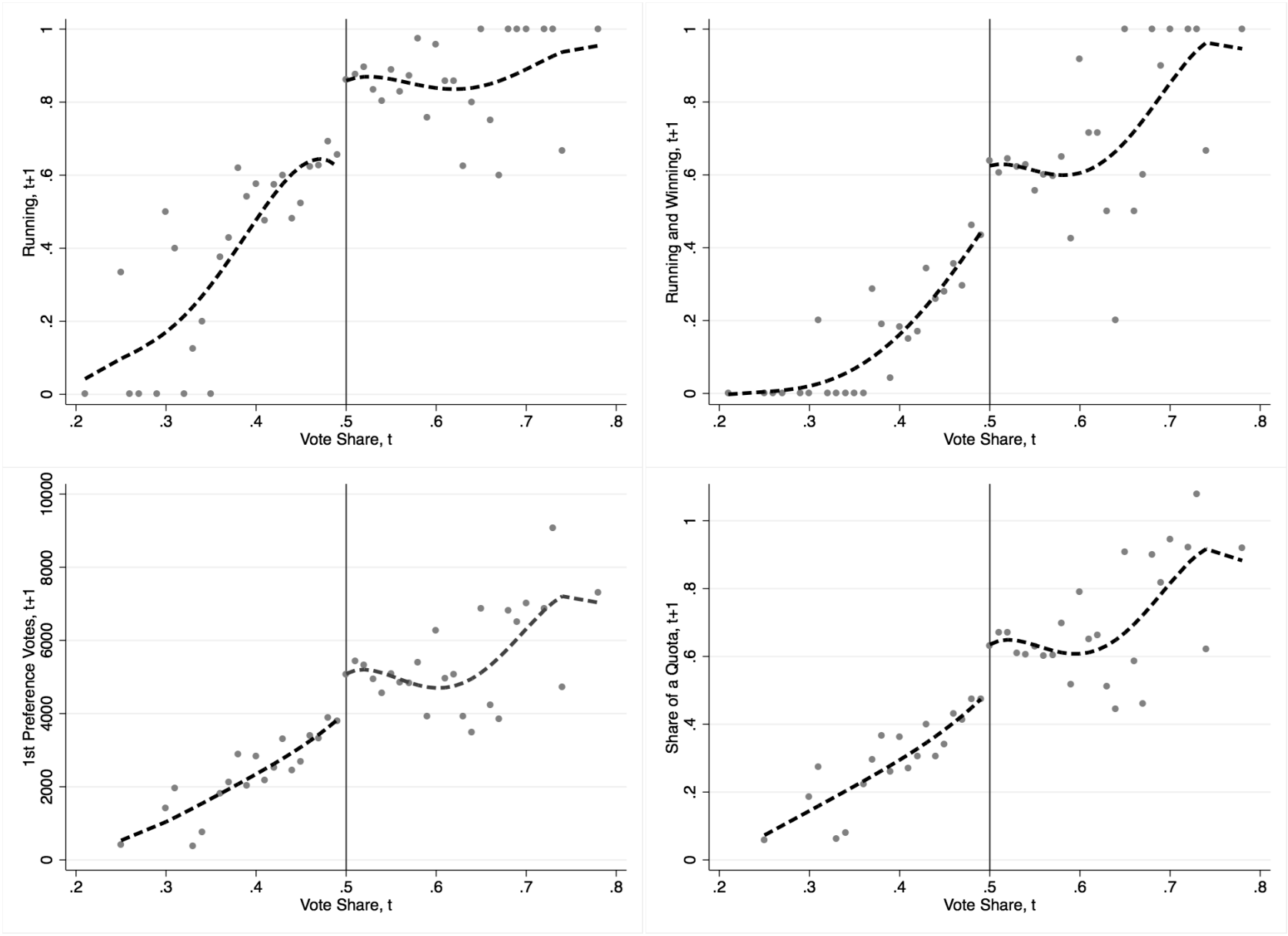


FIGURE 1: This figure plots an outcome from election t+1 against the vote share obtained in election t (the forcing variable). Each circle is the average outcome within 0.01 intervals of the vote share. Solid lines are fitted values from 4th order polynomial regressions on either side of the discontinuity.

Table 1: Estimates of Incumbency Effects

Difference in Probability Between Bare Winners and Bare Losers		
	Parametric Specification	Non-Parametric Specification
Pr(Running & Winning at t+1)	0.178**	0.174***
	(0.071)	(0.053)
Quota Share at t+1	0.157***	0.159***
	(0.051)	(0.046)
First Preference Votes at t+1	1,240***	1,216***
	(429)	(378)
Pr(Rerunning at t+1)	0.211***	0.177***
	(0.065)	(0.051)
Observations	1,678	1,678

Notes: The parametric specification estimates equation (1) using a fourth order polynomial in the forcing variable ($Share_{i,t}$). The non-parametric specification estimates equation (7) using optimal bandwidths which minimise the mean squared error in the RD design (as in Imbens and Kalyanaraman, 2009). *** significant at 1%. ** significant at 5%. * significant at 1%

Each of the 23 elected governments from 1937-2011 involved either Fianna Fail or Fine Gael as the main party. Fianna Fáil has had the most electoral success forming 22 of the 29 Irish governments and electing the largest number of Deputies. We examine whether the incumbency advantage differs across parties by estimating its effect separately for Fianna Fail and Fine Gael as well as "other" candidates (non FF and FG). The estimates are shown in Table 4.

The results indicate that Fine Gael candidates enjoy the largest incumbency advantage of the three groups. The probability that a bare winner from Fine Gael reruns and wins at time t+1 is 25 percentage points higher than that of a bare loser from the same party. The effect for Fianna Fail and others is not statistically significant. The Fine Gael party also enjoys a larger incumbency advantage when measured by the vote share at t+1, first preference votes at t+1 and probability of rerunning at t+1.

Table 2: Political Party Incumbency Effects

Difference in Probability Between Bare Winners and Bare Losers		
Pr(Running & Winning at t+1)	Fianna Fail	0.066
		(0.010)
	Fine Gael	0.247**
		(0.118)
	Others	0.160
		(0.127)
Quota Share at t+1	Fianna Fail	0.161**
		(0.066)
	Fine Gael	0.174**
		(0.081)
	Others	0.114
		(0.087)
First Preference Votes at t+1	Fianna Fail	1244**
		(542)
	Fine Gael	1292*
		(699)
	Others	1016
		(713)
Pr(Rerunning at t+1)	Fianna Fail	0.138*
		(0.072)
	Fine Gael	0.183**
		(0.071)
	Others	0.094
		(0.098)
Observations		1,678

Equation (1) is estimated for each party using a third order polynomial in the forcing variable ($Share_{i,t}$). Robust standard errors are in parentheses. *** significant at 1%. ** significant at 5%. * significant at 1%

6. Validity, Balance and Robustness

The RD design is based on the assumption that candidates who fall just below the threshold provide a valid counterfactual for the treated group just above the threshold. We can test the validity of this assumption by examining whether pre-treatment characteristics are the same for bare winners and bare losers[4]. Any significant differences in these characteristics may invalidate the causal inference relating to the incumbency effect.

[4] Pre-treatment characteristics that are the same for bare winners and bare losers are described as being balanced around the threshold.

Following Caughey and Sekhon (2011), we carry out a rigorous examination of covariate balance by examining a number of pre-treatment covariates in a two percentage point window on either side of the threshold. For each of the eleven pre-treatment covariates, we find no statistically significant difference between the scores of bare winners and bare losers. The results are shown in Figure 2 below. In Table 3 we include the covariates in our baseline regression to test for incumbency advantage and find that their inclusion does not significantly alter the estimates. This provides further evidence that bare winners and bare losers are comparable.

Table 2
Tests for Covariate Balance

Variable Name	**Treated Mean**	**Control Mean**	***p* value from Tests**	***p* value from RDD**
1st Preference Votes, *t-1*	5818.50	5838.10	0.868	0.530
Share of a Quota, *t-1*	0.61	0.48	0.125	0.480
Running & Winning, *t-1*	0.60	0.50	0.359	0.628
Running, *t-1*	0.77	0.80	0.825	0.627
1st Preference Votes, *t*	5164.60	5038.48	0.485	0.806
Being a Fianna Fáil Candidate, *t*	0.47	0.41	0.372	0.858
Being a Fine Gael Candidate, *t*	0.25	0.34	0.164	0.923
Being an Independent Candidate, *t*	0.06	0.04	0.572	0.316
Being a Labour Party Candidate, *t*	0.14	0.13	0.854	0.532
Government supporter, *t*	0.38	0.32	0.354	0.341
Being an Incumbent, *t*	0.52	0.57	0.526	0.553

Covariate balance between treated (n=125) and control (n=125) in a 2% window around the discontinuity. The *p* values for dichotomous variables are from Fisher's exact test. Wilcoxon rank sum tests are used for continuous variables. Two-sided *p* values are reported. Calculations are based on non-missing values. Fourth Order Polynomial functions are used for the RDD

We examine the density of the assignment variable as in Lee and Lemieux (2009). If an imbalance is observed in the density on either side of the threshold this may call the validity of the design into question. It is clear from the histogram presented in Figure 3 that the density is balanced on either side of the threshold and no discontinuous bin-to-bin jumps exist, further supporting the validity of the design.

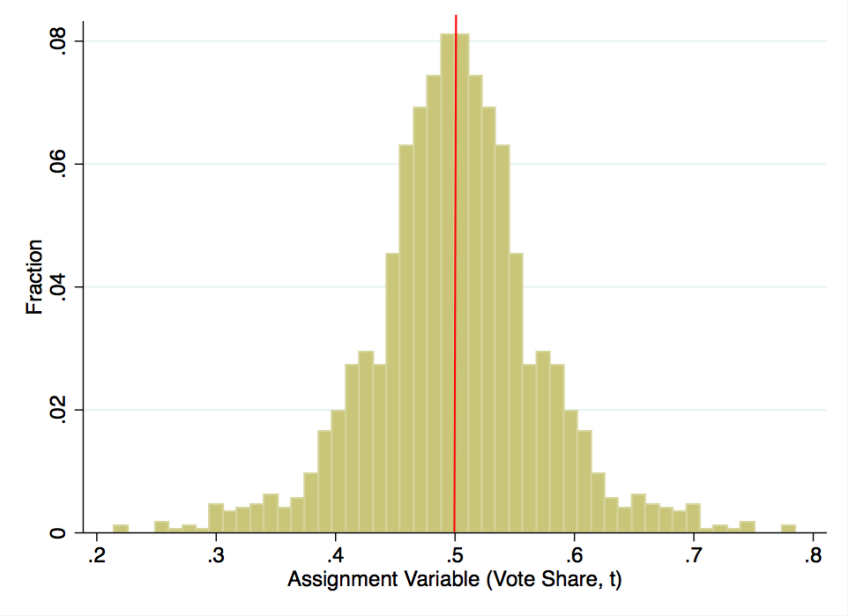
Table 3: Sensitivity of Estimates to Inclusion of Pre-Treatment Covariates

		4th Order Polynomial Estimate
Share of a Quota, t+1	No Covariates	0.157***
		(0.0513)
	Covariates	0.160***
		(0.0506)
1st Preference Votes, t+1	No Covariates	1240***
		(429.0)
	Covariates	1268***
		(410.2)
Running & Winning, t+1	No Covariates	0.178**
		(0.0711)
	Covariates	0.182**
		(0.0711)
Running, t+1	No Covariates	0.211***
		(0.0648)
	Covariates	0.213***
		(0.0653)

The following covariates were added: 1st preference votes, political party, member of the governing party and incumbency status.

Figure 3

Histogram showing density of assignment variable at time t



Note: Bin Width set at 1%

7. Conclusion

We have shown that a significant incumbency advantage exists in Ireland's proportional electoral system. Bare winners of an election at time *t* are 18 percentage points more likely to enjoy electoral success at time *t+1* compared to bare losers. There is also a strong deterrence effect of incumbency as it poses a barrier to the re-entry of challengers. Bare winners of an election at time *t* are twenty percentage points more likely to rerun at time *t+1*. We also find heterogeneity in the incumbency advantage at the party level with the magnitude of the effect being largest for Fine Gael. The estimates reported are robust to a various different parametric and non-parametric specifications.

Our estimate of incumbency advantage in Ireland is not as large as that found in the United States Congress. Lee (2008) and Uppal (2010) estimate that incumbency in the U.S. House causes an increase of thirty to forty percentage points in a candidate's probability of subsequent electoral success. Our results are more in line with Germany and UK elections where Hainmueller and Kern (2005) estimate the effect at twenty percentage points

Our analysis suggests that the regression discontinuity methodology is a valid methodology for estimating incumbency advantage in Ireland. A critical assumption underpinning the validity of RDD is that bare losers provide a good counterfactual for bare winners. We have verified this assumption by showing that these two types of candidates are comparable across a range of pre-treatment characteristics.

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Appendix

Table A1: Estimates of Incumbency Advantage for Various Parametric and Non-Parametric Specifications

N=1678	Non-Parametric (Local Linear Regression)						Parametric (Polynomials)		
Bandwidth	**1/2x**	**Optimal**	**2x**	**1/2x**	**Optimal**	**2x**			
Kernel	**Rectangle**	**Rectangle**	**Rectangle**	**Triangle**	**Triangle**	**Triangle**	**3rd Order**	**4th Order**	**5th Order**
Share of a Quota, t+1	0.128**	0.159***	0.162***	0.138**	0.160***	0.164***	0.174***	0.157***	0.145**
	(0.0626)	(0.0455)	(0.0338)	(0.0616)	(0.0455)	(0.0342)	(0.0417)	(0.0513)	(0.0592)
1st Pref Votes, t+1	1055**	1216***	1185***	1130**	1236***	1245***	1,384***	1,240***	1,158**
	(522.2)	(377.8)	(282.0)	(517.7)	(379.4)	(286.2)	(349.2)	(429.0)	(495.3)
Running & Winning, t+1	0.152**	0.174***	0.157***	0.170**	0.176***	0.167***	0.182***	0.178**	0.160*
	(0.0705)	(0.0527)	(0.0399)	(0.0691)	(0.0525)	(0.0409)	(0.0613)	(0.0711)	(0.0851)
Running, t+1	0.196***	0.177***	0.169***	0.196***	0.186***	0.183***	0.209***	0.211***	0.200***
	(0.0676)	(0.0507)	(0.0384)	(0.0660)	(0.0499)	(0.0382)	(0.0529)	(0.0648)	(0.0762)

Note: Non-parametric RDD uses local linear regressions to estimate the discontinuity. Parametric RDD uses polynomials fitted to either side of the discontinuity (Lee, 2008). For non-parametric estimates, the optimal bandwidth is found using the method outlined by Imbens and Kalyanaraman (2009). For robustness, other bandwidths are shown in the Appendix. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1