MA Research Paper
(Econ 899)

Determining the Incumbency Advantage Effects in Canadian Parliament (An Updated Study)

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Abstract

I apply a regression discontinuity approach to determine incumbency advantages in the Canadian Parliament, finding that incumbents enjoy a 10.8–13.4% increased probability of winning over non-incumbents. I studied two different analyses depending on two breakout years of 1950 and 2011. I figured out that for the 1950 break out year, Liberals enjoyed a slightly more incumbency advantage than Conservatives for both pre and post 1950. My studies show that for the 2011 breakout year, Conservative party enjoyed a higher incumbency advantage than Liberals before 2011. Moreover, incumbency advantage increased significantly for Liberals after 2011 which they ran three governments out of four governments that spanned 2011 year and thereafter.

1. Introduction

There have always been debates around whether incumbent candidates have an advantage of getting elected in the subsequent elections. The reasoning is that people think that being a current incumbent might influence people's choice for the next elections. In this study, I am going to measure incumbency effect on the probability of winning and vote share in the Canadian parliament in comparison to non-incumbents. The determination of this effect helps policy makers to make better decisions and moreover, helps the economy to retain in its healthy position.

I am using the regression discontinuity (RD) approach for this analysis on the Canadian parliament data. This job has been done previously by Chad Kendall and Marie Rekkas in 2012 in the paper, Incumbency advantages in the Canadian Parliament for the parliament data from 1872 to 2008.

However, I am going to update this study with the new data. I have gathered the data from Parliament's Library, and I have done vigorous cleaning on the data. The RD approach has also been used previously by Lee (2008) to analyze U.S data.

2. Data

My data set is from the Library of Parliament of Canada, and it contains candidate first and last name, constituency information, election dates, and votes received. The data in this study has been updated in years and consists of years from 1867 to 2021. My data includes all 44 parliaments of Canada. Currently, there are 334 seats in the Canadian Parliament that each seat represents one constituency.

I am going to estimate the overall incumbency effect as well as the incumbency effect for the two dominant parties in Canada, Liberals and Conservatives. Moreover, I am going to estimate incumbency effect for pre-1950 and post-1950 and pre-2011 and post-2011 parliaments so that I can track how incumbency advantage has changed during the time.

In order to see the incumbency effect, first I need to identify repeated parties. I am using the same approach here as Kendall and Marie (2012). In order to see that, I will match the constituency name, province, and party name to see which parties have been repeated in the consecutive parliaments. To be more specific, in order to make a good comparison between incumbent parties and identify the incumbency advantage, I need to identify the parties that were repeated during consecutive years. If I include the parties that were not repeated in the same province and constituency, there will be irrelevant data in my data set and it will lead us to misleading coefficients.

I will assign a dummy variable to the repeated parties named RepeatParty. This variable gets 1 if the party is repeated in the previous elections and it gets 0 otherwise. We should also note

that if a party has a NULL vote share, it won't be counted as a repeated party for the next election, and the RepeatParty dummy variable gets 0 in this case.

I combined the following parties as "**Conservative**" in my research:
"Conservative (1867-1942)",
"Conservative Party of Canada", " Conservative-Labour", "Independent Conservative", "Independent Progressive Conservative", "Liberal Conservative", "Nationalist Conservative", "Progressive Conservative Party".

I also combined these parties and named them as "**Liberal**": "Christian Liberal", "Independent Liberal", "Independent Liberal Progressive", "Liberal Labour Party", "Liberal Labour Progressive", "Liberal Party of Canada", "Liberal Progressive", "Liberal Protectionist", "Libertarian Party of Canada".

Here, I included all the parties that had conservative expression in their names and added them into the category of **"Conservatie"**. This is also an update for what Kendall and Rekkas did. They only included "Liberal Conservative", "Conservative Party of Canada", "Progressive Conservative Party", and Conservative (1867-1942)".

I believe what I have done creates a more realistic data set of Conservative party of Canada, and it includes all the variations and names that the party has taken during the years.

The most supported parties in Canada are Liberals and Conservatives; therefore, I restricted my observations and results to these two parties.

I created a variable named declaredwinner which gets 1 when the candidate is elected and gets 0 when they are defeated. If the candidate won by acclamation, the variable declaredwinner gets 1 as well.

I defined a variable named marginal victory named as MV which for the winning party at each parliament and constituency is calculated by the number of votes they received minus the number of votes the second-ranked party received divided by the total votes in that parliament and specific constituency. MV for other candidates is calculated by the number of votes the party received minus the number of votes the winning party received divided by total valid votes in that parliament and specific constituency.

To see whether a candidate was an incumbent or not, I create another variable named MVprev which gives us the margin of victory in the previous parliament for the candidate. If MVprev is bigger than zero it means that the candidate was winner in last election; therefore, they were incumbent. A dummy variable here is made to indicate if the party was the incumbent or not. dummyMVprev gets 1 if MVprev is bigger than zero and it gets zero if MVprev is missing or less than zero. This is a determination of how to recognize previous incumbency.

3. Methodology

Over the past three decades, political scientists have estimated incumbency advantage using a variety of methods. The majority now, however, follow Lee (2008) and estimate district-level incumbency effects using the two-party voteshare with an RD model. The rationale behind the RD design and its advantages for causal identification are well known: whilst general comparisons of the subsequent electoral success of winners and losers are mixed up by a number of factors (such as partisan match and candidate characteristics), the RD enables us to determine the size of the incumbent advantage, distinguished by overall incumbent success, by comparing the subsequent electoral performance of candidates or parties that closely win an election to candidates or parties that nearly lose assuming that other factors influencing incumbent success are distributed randomly across winners and losers close to the loss/victory threshold (Lee 2008). RD approach has been utilized to estimate incumbency advantage in American federal and state elections (Fowler 2016; Hall and Snyder 2015), Canadian and British federal elections (Eggers and Spirling 2017; Kendall and Rekkas 2012), and municipal elections (Lucas 2021).

Because in our data we are dealing with more than two parties, we use margin of victory as the forcing variable. The difference between the number of votes the winning party obtained and the votes the second-place party earned, divided by the total number of votes, is the margin of victory. As a result, the successful party will have a positive margin of victory, while the losers will have a negative margin of victory. Margin of victory is defined by *MVijt*, for party *i* in constituency (federal electoral district) *j* and election *t*. A positive margin of victory in the election at time *t-1* corresponds to an observation that is assigned treatment since the threshold of margin of victory that defines assignment to treatment (incumbency) is zero. (Kendall and Rekkas 2012).

The RD model that I will use is:

$$Pijt = \alpha i + \beta i Dij,t-1 + \gamma i MVij,t-1 + \delta i Dij,t-1 MVij,t-1 + \varepsilon ijt$$

$D_{ij,t-1}$ is a dummy variable that takes one when *MV* is positive. The Greek letters are also parameters to be estimated. εijt is the error term. *Pijt* is probability of winning that takes value one when a party is a declared winner in election *t* and it takes value zero when the party is a loser. When using the whole sample for estimation, the parameter βi would be the overall incumbency effect. As a normal RD approach, I would estimate the model using two linear models and a cubic and quartic form for margin of victory to test for robustness. A bandwidth of +/- 10% and +/-15% is chosen for linear specification because if we increase our bandwidth, we will get an imprecise result. For polynomial formats, we can broaden the range and use a bandwidth of +/-70%. The sample size would also differ because of the different choices of bandwidth that we made here. The interaction term should also be included in the model so that the functional form can differ between treated and untreated observations. (Kendall and Rekkas 2012).

4. Results

The main results are based on the overall incumbency effect. I also present the coefficients for Liberal and Conservative incumbency effects separately. In the first table, I summarized the results for pre-1950 and post-1950 time span. The impacts of incumbent status on winning odds are shown in Table 1, which supports the significance of the discontinuity in Figure 1. A quartic specification, a cubic specification, and linear specifications restricted to +/10% and +/15% of the bandwidth surrounding the discontinuity are used to estimate the values in table 1 and 2 using model (1). As is usual in the RD literature, I considered multiple polynomials as a robustness check for our results.

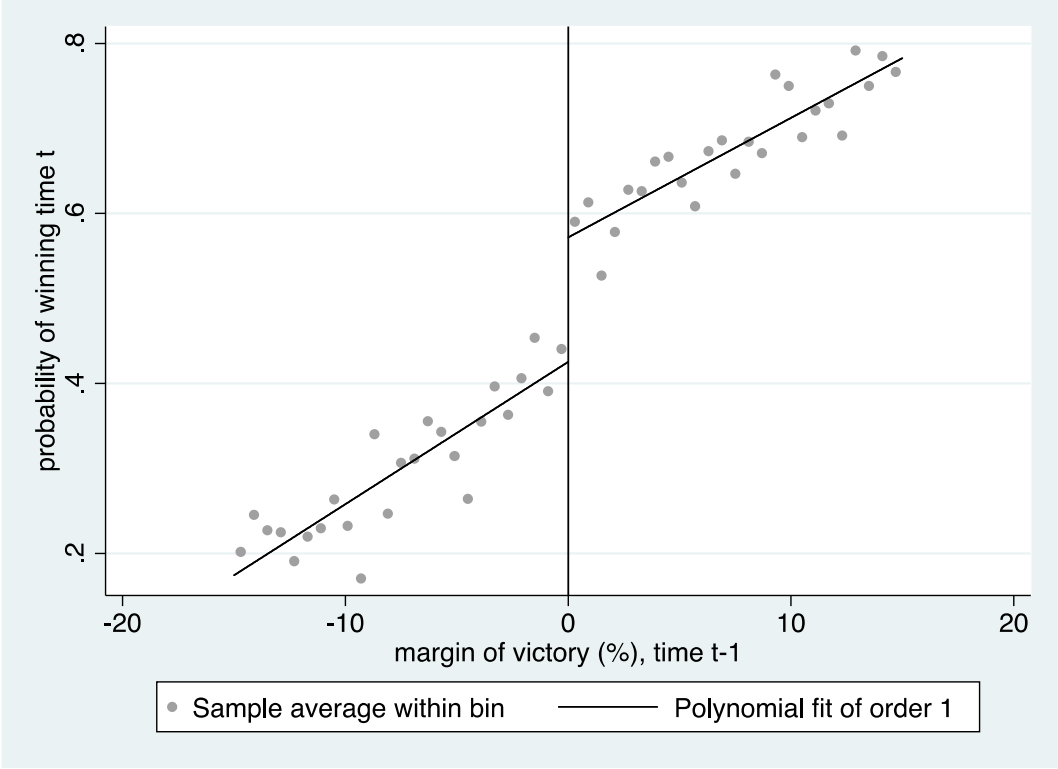

FIGURE 1 Combined (Liberal and Conservative) probability of winning, all time periods
NOTE: Curves are for a linear probability model using +/−15% of margin of victory around the discontinuity at zero

In Figure 1, the results of a local linear regression for a bandwidth of 15% on each side of the threshold are plotted alongside the average likelihood of winning in each 1% bin of the margin of victory in the previous election. The graph combines data from all accessible time periods for Liberals and Conservatives. The regression discontinuity approach should produce meaningful results because we observe a distinct discontinuity at the zero margin of victory level.

I have also included another graph in Figure 2 which shows the relation between probability of winning at time t-1 and margin of victory at time t-1 for a bandwidth of 15% on each side of the threshold. As we can see from the graph, the efficiency of RD approach is well recognizable in this graph too.

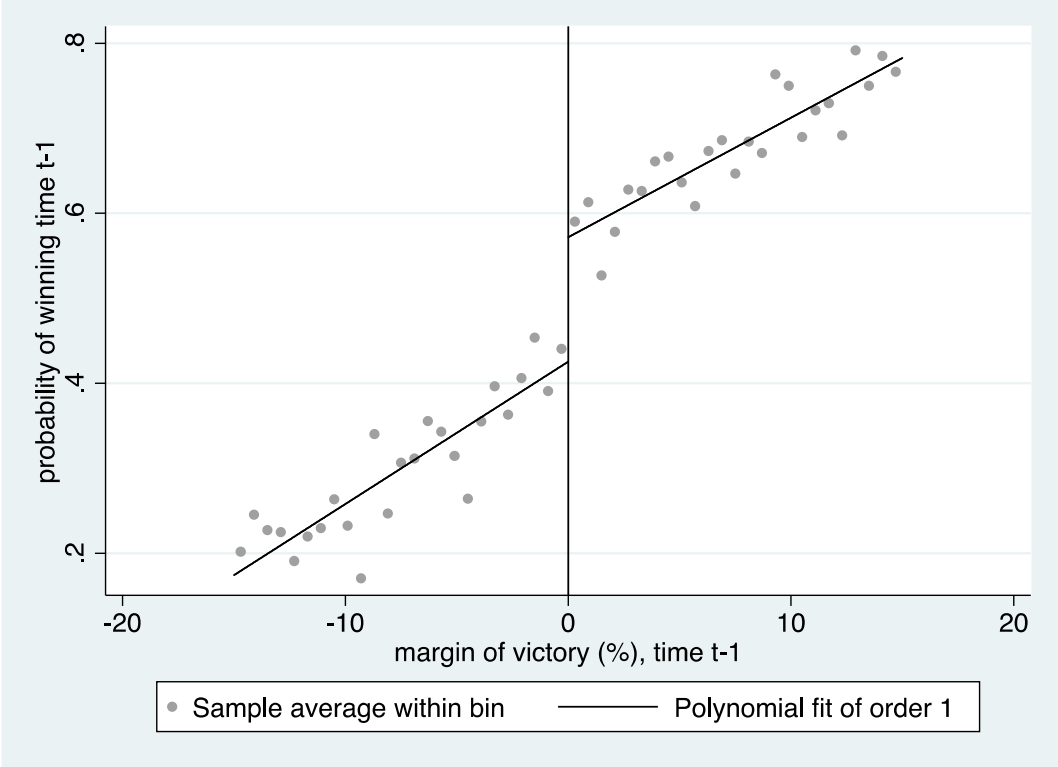

FIGURE 2 Combined (Liberal and Conservative) probability of winning, all time periods
NOTE: Curves are for a linear probability model using +/−15% of margin of victory around the discontinuity at zero

For the whole sample, the overall incumbency effect on the probability of winning ranges from 10.8% to 13.4% and is significant at the 99% confidence interval level. According to this finding, incumbent parties are typically 13% more likely to win an election than non-incumbent parties, whether or not they are running incumbent candidates. It is noteworthy to mention that there are no individual incumbency effects here; therefore, all coefficients that I interpret here is about being the incumbent party and not the incumbent individual. The reason is that we already identified repeated parties with province, constituency, and party names to be matched. Prior to 1950, the Liberal Party enjoyed an incumbency advantage of between 10.6% and 14.3%, while the Conservative Party enjoyed an advantage of up to 13.3% in the 0.01 significance level. We can also see that for pre-1950 and Conservatives the linear approach with 10% margin of victory and the Quartic method gives us coefficients that are significant in 95% confidence interval which is lower than significance level for other

approaches. After 1950, the Liberals' incumbency advantage decreased to 9.4% to 13.4%, and the Conservatives' advantage decreased to 8.9% to 13.2%. The local linear regressions with 15% bandwidth, however, generally produce more significant results (there is at least one coefficient with the significance level of 0.05 in the other approaches.)

Dependent Variable: Probability of Winning	Combined	Liberal Party		Conservative Party	
		Pre-1950	Post-1950	Pre-1950	Post-1950
Mean probability of winning	.4543195	.6389513	.4255652	.4981132	.3783831
Regression discontinuity incumbency estimates Overall incumbency					
Linear (+/−15%)	0.134*** (0.0272)	0.141*** (0.0415)	0.134*** (0.0309)	0.133*** (0.0407)	0.132*** (0.0333)
Linear (+/−10%)	0.108*** (0.0312)	0.106** (0.0493)	0.0940** (0.0368)	0.118** (0.0489)	0.0890** (0.0396)
Cubic	0.112*** (0.0272)	0.114** (0.0449)	0.111*** (0.0323)	0.111*** (0.0417)	0.0972*** (0.0348)
Quartic	0.115*** (0.0319)	0.143*** (0.0525)	0.103*** (0.0386)	0.129** (0.0514)	0.103** (0.0411)
N (linear, +/−15%)	7,609	1,698	2,358	1,533	2,020
N (linear, +/−10%)	5,581	1,293	1,680	1,201	1,407
N(polynomial)	16,181	2,571	5,700	2,265	5,645

Table 1

In the next part, I am going to introduce another time analysis which is pre-2011 and post-2011. This is a year when I introduced an update to the study that Kendall and Rekkas did. This study is interesting as it clearly shows how the updated study helps to see the incumbency advantage during the previous parliaments. In other words, I would like to see how the incumbency advantage has changed before and after the time that more data has been added to the Kendall and Rekkas study. This work helps interpret why the update in this study was necessary with the new parliaments data as it is showing us a significantly different result.

Parliaments number 41 to 44 are the data that was added in my study. For this analysis, I considered parliament 1 to 40 as pre-2011 and parliament 41 to 44 as post-2011. The incumbent party in parliament 41 which spans the years of 2011-2015 is Conservative while the incumbent party in parliament 42, 43, and 44 which spans the years of 2015 to 2021 is Liberal. My hypothesis is that because of this trend, I expect the incumbency advantage for Liberals increase significantly. Liberals have been the incumbent government in the most recent parliaments, and it clearly tells us why there should be a significant level of incumbency advantage for them in the 41st parliament and thereafter. I summarized these results in table 2.

Dependent Variable: Probability of Winning	Liberal Party		Conservative Party	
	Pre-2011	Post-2011	Pre-2011	Post-2011
Mean probability of winning	.5095172	.4924681	.4164267	.3849444
Linear (+/−15%)	0.124*** (0.0276)	0.303*** (0.0793)	0.135*** (0.0273)	0.0793 (0.101)
Linear (+/−10%)	0.0897*** (0.0327)	0.245** (0.0952)	0.119*** (0.0317)	-0.0374 (0.126)
Cubic	0.0961*** (0.0292)	0.286*** (0.0817)	0.106*** (0.0277)	0.0161 (0.0971)
Quartic	0.105*** (0.0340)	0.260*** (0.0988)	0.139*** (0.0328)	-0.131 (0.120)
N (linear, +/−15%)	3,637	331	3,173	286
N (linear, +/−10%)	2,672	240	2,352	195
N (polynomial)	7,124	844	6,757	847

Table 2

According to these results, prior to 2011, the Liberal Party enjoyed an incumbency advantage of between 8.9% and 12.4%, while the Conservative Party enjoyed an advantage of 10.6% to 13.9% all significant at 0.01 level. After 2011, the Liberals' incumbency advantage increased significantly in the range of 26% to 30.3% while the Conservatives' advantage is almost insignificant at all levels of confidence interval i.e. 99%, 95% and even 90%. This means that

the null hypothesis which is "being the incumbent party affects the probability of winning" is rejected for post-2011 for Conservatives, and there is no significant relationship between these two variables in this case.

5. Discussion

In order to show that incumbents had a significant advantage in the Canadian Parliament in terms of a higher probability of winning, I employed an RD technique. The incumbency impact is stronger for both Liberals and Conservatives prior to 1950 than it is after 1950, according to the evidence I've presented. This emphasises the significance of continued research into the scope and causes of this effect. More significantly, as fewer new parties emerge over time, the likelihood that either the Liberals or the Conservatives will win declines (meaning the probability of winning), indicating that some votes are being given to the smaller new parties.

Moreover, the incumbency advantage for Liberals has significantly increased after 2011 while for Conservatives there is no meaningful relationship between incumbency advantage and probability of winning after 2011. (comparing Column 3 and 5 in Table 2). Before 2011, Conservatives used to benefit incumbency advantage more than Liberals (comparing Column 2 and 4 in Table 2).

However, this trend is different for 1950 breakpoint year. When the breakout year is 1950, Liberals enjoy a slightly higher incumbency advantage than Conservatives for both pre and post 1950 years. This conclusion comes from comparing pre-1950 advantage for Liberals and Conservatives (comparing Column 3 and 5 in Table1), and also comparing post-1950 for Liberals and Conservatives (comparing Column 4 and 6 in Table 1).

The difference in the breakout point year can be interpreted as the number of times that these two parties were running a government. It worth to mention that when we consider the breakout year, we should count for the number of parliaments that a party is incumbent before and after the breakout year. If the number of times that a party is incumbent is more frequent after a breakout year, it would be more probable that the incumbency advantage increases during those years. As as mentioned previously, after 2011, Liberals ran 3 consecutive dominant seats in the parliament that can be evidence of why incumbency advantage has increased for Liberals after breakout year of 2011.

6. Future studies

There are many potentials for the future studies for this kind of research. One type of study that I can propose, and I think it might give us a very significant results is to compare the incumbency effect for each and every parliament. Currently, there are 44 parliaments in this study. One approach is to divide the parliaments to the pre and post years that was done in this study for two different breakout year. In this study, I created two tables: one study consisted of the pre and post incumbency effects for the year 1950, and the other table represented pre and post 2011 incumbency coefficients. The results are very useful to show us the incumbency

advantages overtime; however, to see incumbency advantage in each parliament we can do the study for each of 1 to 44 parliaments and collect the coefficients for Liberals and Conservatives in four different RD models using two linear models and a cubic and quartic form for margin of victory to test for robustness.

In this case, we can compare incumbency effects in each parliament individually for either Liberals or Conservatives or both. I believe this result doesn't show us how incumbency advantage has changed during the time but instead it shows us how incumbency effect has changed in each parliament. This kind of study becomes more demandable when each party aims to see how they have been worked during the past period. This can be a measure of the party's success during the years. We can interpret the coefficient as following: "The incumbency advantage in each parliament in comparison with the previous parliament". This is a very useful tool for each party when they want to identify their past performance. The trend for these coefficients can be very helpful as parties can recognize in which period they enjoyed the most incumbency advantage so that they can identify the past period's policies and performance and try to adhere to them in the next parliament.

7. References

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