Does the risk or realization of a Federal Election precipitate Canadian output growth?

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Abstract

This paper asks whether Canadian data is consistent with political opportunism, partisanship and/or political competition effects on real output growth since Confederation. Using data from the 1870 to 2005 time period, we find support for an electoral cycle only if actual election dates are replaced with the predicted election hazard (generated by from a Cox-proportional hazard model) in the test. On the other hand, we find strong evidence for the existence of partisan cycles in the data and mixed evidence with respect to whether changes in the degree of political competition have affected real output growth. Evidence in favour of such an effect arises only in more recent times, from 1924 onwards.

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1. Introduction

In this paper we search for evidence of a federal election or partisan political effect on economic growth in Canada. Such a search is not, of course, unique to us. The quest to find a political business cycle in Canada and elsewhere is undertaken often, but not often with success. In perhaps the most exhaustive study of this question done at the Federal level in Canada, Serletis and Afxentiou (1998) conclude that there is “no credible evidence of political business cycles...over the period 1926 to 1994”.¹ This finding is broadly consistent with the results found for a large number of different countries around the world.²

Our contribution to this ongoing quest is twofold. First we extend Serletis and Afxentiou’s period of coverage back almost to the origin of Canadian democracy (1867) and then forward until 2005. This virtually doubles their sample size (from 20 to 38 elections) and thus allows us to assess the robustness of the “no electoral or partisan effect” outcome over a much longer time period. Second and more importantly, we test for the existence of an election effect on growth by using an ex ante rather than an ex post measure of election timing. That is, in explaining why one should not expect an effect from elections on output, Serletis and Afxentiou argue (p. 43) that long and variable lags in fiscal and monetary policy impose an unrealistic degree of precision in planning accuracy so that policy can anticipate actual election calls. Here we propose a weaker requirement. In our analysis policymakers are assumed to respond to the likelihood of an election given that an election has not yet been called.

Our analysis begins in section 2 by setting out the reasoning behind a simple test for the presence of electoral, partisan, and political competition effects on the process describing real output growth in Canada since 1870. In section 3 we test for the implied relationship first by using actual and

¹ See also Ferris, Park & Winer (2008). In Canada there appears to be more support for electoral and partisan political cycles at the provincial rather than federal level (see Reid (1998), Kneebone et al. (2001) and Tellier (2006)).
led election dates. In these cases the results tend to confirm Serletis and Afxentiou’s rejection of opportunistic cycles in the data. On the other hand, our tests do uncover evidence of a partisan effect on output growth. Our next step is to further refine the test for opportunism by substituting a measure of election uncertainty in spirit of Frey and Schneider (1978) and here we find improved but still insignificant support for the opportunism hypothesis. This sets the stage for our adoption of Cox proportional election hazards in section 4 as an ex ante measure of the likelihood of a forthcoming election. Section 5 summarizes the results and presents our conclusions.

2. A Simple Test for Electoral and Partisan Effects on Growth

The reason why it seems plausible that election periods could generate a cycle in real output is that incumbent political parties have an incentive to manipulate public policy to retain political power. Thus underlying the theories of the political business cycle is the idea that political parties will behave strategically or opportunistically to increase real output prior to elections. Early theories of the political business cycle (Nordhaus 1975) assumed that voters were myopic, permitting rational political parties to fool voters into thinking that their stewardship of the economy was better than otherwise. Later refinements recognized that persistent fooling would be recognized by voters (Rogoff and Sibert, 1988 and Rogoff, 1990) and instead invoke asymmetric information in relation to political competence to explain why rational voters would value the pre-election use of policy to signal competence. In either case, economic growth is predicted to rise either in the election period itself [ELYEAR] or in the period leading into the election [ELYEAR(1)] and then fall back in the periods following [ELAPSE]. In a further modification, Frey and Schneider (1978) argue that by pursuing electoral opportunism the political party must forego those policy options that are favoured ideologically by its supporters. The desire to use opportunism to tilt the electoral margin then becomes critical only when the election outcome is uncertain. Hence not all elections generate opportunistic output effects, only uncertain ones. In the
test below we measure greater election uncertainty ex post as a smaller fraction of the total seats won by the winning party [1-SEATS].

Our contribution to this approach is to recognize that because the timing of election calls is uncertain in parliamentary democracies, opportunistic policies must be based on when the election is expected to arise. Hence output response is more likely to be seen in relation the risk of an upcoming election rather than its realization in the election call. To measure that likelihood, we use the predicted election hazard generated by the Cox proportional hazard model used to measure election timing in Ferris and Voia (2009). To the extent that the strategic use of policy is based on the hazard of an election arising (as evaluated by the party doing the choosing), the estimation results using these hazards [Cox-Hazard] should improve if opportunism is present.

The second hypothesis for why election outcomes can lead to output cycles emphasizes the partisan nature of politics and argues that political parties differ in their ideology and hence in the policies they adopt once elected (Hibbs 1977). For example in the case of Canada, the party to the left (the Liberal Party, LIBERAL) typically advocates greater involvement by the state in the economy and thus is expected to spend more when in power. Hence depending on which party is chosen to govern, the effect of the governing party on output can be more or less expansive. There is a second reason why a positive correlation could arise between LIBERAL and economic growth. Individual voters may prefer liberal governments when times are good and more conservative governments when times are bad. For our purposes, it matters little which way causality runs, both hypotheses involve the co-mingling of economic and partisan political outcomes. For the purpose of generating a partisan cycle it matters only that output is consistently larger (smaller) when liberal (conservative) governments are in power.

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3 Here SEATS represents the fraction of total available seats won by the winning political party in parliament.
power. The inclusion of LIBERAL, the time period when the Liberal Party was the governing party in Canada, then tests for the presence of a partisan effect on real output growth.

The final hypothesis tested examines the effect on real output growth produced by changes in the degree of political competition. This follows up on recent work by Ferris, Park and Winer (2008). In their evaluation of the different effects of politics on the expenditures of Canada’s federal government only the percentage of seats won by the winning party, SEATS, was found to produce a consistent effect. Using SEATS as an ex post measure of the competitiveness of each federal election (where a larger winning majority signals a less competitive election), less competitive outcomes were consistently associated not only with a larger government (expenditure) size but also with more expansive fiscal intervention in the short run. From this perspective, then, the degree of competition in each political election could influence real output growth though its effect on expansiveness of fiscal policy.

While we have emphasized the potential role of politics on growth, real output variations are at least as likely to have been produced by changes in underlying economic fundamentals. Hence we can assess the importance of the political factors accurately only if we control satisfactorily for the variations in economic factors that also influence growth. Here we are fortunate. Because Canada is a small open economic whose industrial structure is tightly integrated with the U.S., we can use U.S. growth rates to control for economic and/or other non-Canadian political influences on economic growth. In the analysis below the growth rate of the U.S. Index of Industrial Production (USGROWTH) is used to control for common economic factors underlying growth.

Combining these considerations, a simple regression model test for the presence of a political business cycle in Canada is suggested. Setting the above hypotheses in the form of a linear regression, our test becomes,

4 The correlation between the growth rate of real GNP and the growth rate of the U.S. Index of Industrial Production is .583, with causality unlikely to be running from Canada to the U.S.
Output Growth = \( \beta_0 + \beta_1 USgrowth + \beta_2 USgrowth(-1) + \beta_3 Election \text{ variable} \)  
+ \( \beta_4 \text{Elapse} + \beta_5 \text{Liberal} + \beta_6 \text{Seats} + \varepsilon \),

where different Election variables are used to proxy to the different versions of the opportunistic election hypothesis, \( \varepsilon \) is white noise, and where the test of our political hypotheses predicts that the sign of the coefficients of \( \beta_3, \beta_5 \) and \( \beta_6 \) will be positive while the sign of \( \beta_4 \) will be negative.

3. Variable Descriptions and Preliminary Results

In Table 1 below we present the descriptive statistics of the variables used in the different models of our test. A more detailed description of the variables and the sources is given in the data appendix. From Table 1 all variables can seen to be I(0) so that they share the important time series characteristic that the underlying processes are stationary. It will also be noticed that the Cox hazards generated do not all lie between 0 and 1. The reason that hazards above 1 can be observed is that the Cox proportional hazard model insures bounding when evaluations are done at the averages of the control variables, but the estimated Cox hazards use period specific values of the control variables. Because of this, control variable outliers may occasionally generate individual hazard values that exceed 1. In our work we retain the estimated values (rather than truncate them) because we believe that these levels better reflect the relative likelihood of an election across time periods rather than because we believe that their absolute level reflects a likely outcome.  

Using these variables, we present in Table 2 the results of our test for political influences on Canada’s growth rate. We begin by noting that in all forms of the test, U.S. growth rates were found to be highly correlated with Canada’s GNP growth rate. In our 1870 – 2005 sample period, U.S. growth rates account for roughly forty percent of the variation in real output growth arising in Canada and

--- insert Table 1 here ---

There are only three occasions when the generated hazards exceed 1.
hence over eighty percent of the variation explained by our equations. While there will be some degree of endogeneity between these two growth rates, it is much less likely that U.S. growth rates are caused by Canada’s political process and economic fundamentals rather than the reverse. For this reason we believe that US growth rates represent good controls for our analysis.

In model (1) corresponding to the first column of Table 2, we use the year of the election [ELYEAR] to test for political opportunism. As can be seen, the $\beta_3$ coefficient is neither significant nor does it even have the expected positive sign. In model (2), then, we replace ELYEAR with ELYEAR(1) and hence test for the effect on output growth arising in the period leading into each election. In this case the $\beta_3$ coefficient estimate is positive as expected, but is also insignificantly different from zero. In model (3) we test for whether the absence of a significant effect arises because of the suggestion by Frey and Schneider (1978) that opportunism should arise only when the election is uncertain. Hence scaling the pre-election period by a measure of its uncertainty [ELYEAR(1)*(1-SEATS)], we find that the significance of the positive effect on real output is increased, but not by enough to become significantly different from zero, even at the 10% significance level. It follows that if we use conventional significance levels to assess whether output responds positively in the interval leading into Canadian federal elections (whether uncertain or not), the results give no support to the hypothesis that opportunistic or strategic behavior leads to a cycle expansion in the period before an election. This result is directly in line with Serletis and Afxentiou’s (1998) finding of no evidence for an opportunistic political cycle.

The corollary to the proposition that growth increases in the period before an election is that real output growth should fall back over the life of the elected government such that $\beta_4 < 0$. This predicted outcome is not found in model (1), but is found to be significantly negative in each of the succeeding models. There is then some evidence consistent with the existence of an opportunistic
election behavior, but with no evidence of an increase in output prior to the election the interpretation of the negative coefficient becomes somewhat problematic.

-- Insert Table 2 about here --

While models (1) through (3) present little evidence of opportunistic cycles, all three versions of the model generate results strongly consistent with the existence of a partisan output effect. In all three models, the governing period of Liberal governments [LIBERAL] is found to be positively correlated with real output growth and with each $\beta_4$ significantly greater than zero. There is then strong evidence for the existence of a partisan cycle, even if the case for opportunism is weak.

Lastly, all three equations suggest that the finding by Ferris, Park and Winer (2008) of a positive connection between levels of political competition and both government size and the extent of fiscal intervention does not translate into any measurable effect on growth. Although the $\beta_6$ coefficient estimates of political competition on real output do become increasingly positive as we move from models (1) through (3), in none of the cases is the coefficient estimate found to be significantly different from zero.

At this stage of our analysis, then, the best that can be said for evidence of a political business cycle in Canada is that the data are consistent only with a partisan effect on output growth. While successive models focusing on opportunism become perhaps a bit more suggestive, there is as yet no evidence generated that is statistically consistent with the timing prediction coming from that hypothesis.

4. Opportunism as a response to the Risk of an Election

In the last three columns of Table 2 we present three versions of model (4), our version of the test for political business cycles. This model focuses on opportunism appearing as a growth response to the risk of, rather than the occurrence of, an election. To represent the risk of a forthcoming election,
we use as the election variable the predicted Cox-hazards generated by an empirical model used to
establish the existence of election timing in Federal government elections in Canada over this time
period (Ferris and Voia, 2009). The hypothesis underlying this version of the test is that the timing of an
election is an ever open choice by the governing political party that depends on a set of varying political
and economic factors. Changes in these determinants change the election hazard and suggest that
when the election call becomes more likely, opportunism implies that policies will be more likely to be
adopted in response. Hence the more likely is the election call, the greater will be the expected strength
of the policy and output response.

The three versions of model (4) differ from the first three models only in the use of Cox-
proportional hazards to measure the risk rather than the realization of an election and differ from each
other only in the time period covered. Model (4a) covers the entire sample period, 1870 – 2005; model
(4b) covers 1924-1996, the time period used in Serletis and Afxentiou (1998); and model (4c) covers the
most recent time period, 1960 – 2005. As a test of robustness, then, the three time periods produce
coefficient estimates that are broadly similar. More surprisingly, while the political business cycle
theory represented by the entire equation performs well in each period, it is in the middle period that
the data fits best with the proposed hypothesis.

In terms of the individual hypothesis tests, the two sets of three equations differ in interesting
ways. First, however, both sets of equations produce results strongly consistent with a partisan Liberal

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6 It might be thought that because there is some evidence of serial correlation among the residuals that the
estimation of a more dynamic model would reduce the significance of our key variable, the Cox-hazard. This is not
the case, however. Including the lagged dependent variable as a right hand side variable in model (4a), for
example, results in

growth = -1.21 + 0.32 usgrowth + 0.17 usgrowth(-1) + 2.32 Cox-hazard – 0.57 Elapse + 2.27 Liberal + 3.95 Seats
(8.70) (3.90) (1.93) (2.30) (3.16) (0.92)
- 0.1 growth(-1); R^2 Adj. = .454, F = 16.79
(1.27)
effect. The $\beta_5$ coefficient on LIBERAL is significantly positive (at one percent) in every equation run. Second, the case for an output effect arising from political competition is strengthened through the use of the Cox hazards. Although the $\beta_6$ coefficient is small and insignificant over the longest time period, the coefficient becomes both larger and increasingly significant as the time period is shortened. It then appears that the effect of political competition on growth has become stronger in more recent periods.

The greatest difference between the two sets of equations, however, comes from the fact that evidence of opportunism now appears when we use a measure of the risk, rather than realization, of an election. In all time periods the coefficient estimate, $\beta_3$, on the risk of an election is found to be positive and significant. In relative terms, the estimated effect is weakest over the entire period, but like the effect of political competition, evidence consistent with opportunism becomes stronger and more significant as the regression equations exclude the more distant time periods to focus on those closer to the present. As might be expected, since the growth effects of an expected election will be spread over the entire governing period rather than concentrated at the end, evidence of a fall back in output growth through governing tenure should be weaker. Hence while the negative effect on growth of governing tenure appears to be present, the $\beta_4$ coefficient quickly loses significance as the time period is shortened towards the present (and evidence of response to the risk of an election increases).

Somewhat ironically, it is in the 1924 – 1996 (Serletis and Afxentiou) time period that the use of the risk of a forthcoming election rather than the actual election period results in our best equation fit. In this period, the coefficient predictions are consistent with all political hypotheses—opportunism, partisanship, and political competition. The use of a more precise measure of the signals that policy makers respond to seems not only to result in that response appearing more clearly in the data but also makes more apparent the other political effect on growth coming from the competitiveness of the political process.
5. Conclusion

In this paper we have argued that evidence of electoral opportunism in the process describing real output growth is best searched for by using evidence on political parties’ own views of the likelihood of an election arising in each period rather than viewing elections as one-shot events arising randomly about ex post realizations. This we do by adopting the period specific hazards predicted by a Cox proportional hazard model of election timing in Canada (Ferris and Voia, 2009). While the results in all versions of our tests dictate evidence consistent with a partisan political effect, it is only when we replace actual electoral outcomes with the risk of election calls, as represented by Cox proportional hazards, that evidence of opportunism clearly arises. The results also suggest that political effects have not always had the same weight through time, evidence of opportunism, in particular becomes stronger in more recent rather than distant time periods. Finally, while our results give some support to the Frey-Schneider (1978) uncertain election effect, the results indicate more support for political competition in later rather than earlier time periods.
Table 1

Descriptive Statistics of Political Variables and Growth Variables

1870 - 2005

<table>
<thead>
<tr>
<th></th>
<th>ELYEAR</th>
<th>ELAPSE</th>
<th>LIBERAL</th>
<th>SEATS</th>
<th>GROWTH</th>
<th>USGROWTH</th>
<th>(1-SEATS)*ELYEAR</th>
<th>COX-HAZARD</th>
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<tbody>
<tr>
<td>Mean</td>
<td>0.272</td>
<td>1.654</td>
<td>0.610</td>
<td>0.599</td>
<td>3.681</td>
<td>3.941</td>
<td>0.115</td>
<td>0.224</td>
</tr>
<tr>
<td>Maximum</td>
<td>1.000</td>
<td>5.000</td>
<td>1.000</td>
<td>.785</td>
<td>16.51</td>
<td>22.93</td>
<td>0.587</td>
<td>1.698</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>.413</td>
<td>-12.72</td>
<td>-24.85</td>
<td>0.000</td>
<td>0.006</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.447</td>
<td>1.400</td>
<td>0.489</td>
<td>0.087</td>
<td>5.02</td>
<td>9.491</td>
<td>0.195</td>
<td>0.305</td>
</tr>
</tbody>
</table>

ADF levels (constant automatic)

-12.1* -10.7* -4.26* -5.07* -8.87* -11.88* -10.14* -8.78*

1% c.v. -3.48

* significant at 1%
Table 2
Test for a Canadian Political Business Cycle
1870 – 2005
(t-statistics in brackets)

<table>
<thead>
<tr>
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</thead>
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<tr>
<td>Constant</td>
<td>1.74 (0.657)</td>
<td>0.636 (0.255)</td>
<td>-0.077 (0.029)</td>
<td>-1.000 (0.359)</td>
<td>-4.11 (1.60)</td>
<td>-4.13 (1.53)</td>
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<tr>
<td>USgrowth $\beta_1$</td>
<td>0.316* (8.88)</td>
<td>0.316* (8.98)</td>
<td>0.315* (8.97)</td>
<td>0.306* (8.65)</td>
<td>0.281* (7.28)</td>
<td>0.320* (5.06)</td>
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<tr>
<td>USgrowth(-1) $\beta_2$</td>
<td>0.141* (4.04)</td>
<td>0.133* (3.79)</td>
<td>0.131* (3.72)</td>
<td>0.135* (3.90)</td>
<td>0.147* (3.92)</td>
<td>-0.009 (0.156)</td>
</tr>
<tr>
<td>ELYEAR $\beta_3$</td>
<td>-0.302 (0.284)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ELYEAR(1) $\beta_3$</td>
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<tr>
<td>(1-SEATS) $\beta_3$</td>
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<td>*ELYEAR(1)</td>
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<tr>
<td>COX-HAZARD $\beta_3$</td>
<td></td>
<td></td>
<td></td>
<td>2.21*** (1.81)</td>
<td>2.61** (2.34)</td>
<td>2.68* (2.85)</td>
</tr>
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<td>ELAPSE $\beta_4$</td>
<td>-0.485 (1.40)</td>
<td>-0.581** (2.14)</td>
<td>-0.569** (2.18)</td>
<td>-0.539** (2.17)</td>
<td>-0.354 (1.41)</td>
<td>-0.283 (1.47)</td>
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<tr>
<td>LIBERAL $\beta_5$</td>
<td>1.74** (2.47)</td>
<td>1.83* (2.65)</td>
<td>1.86* (2.70)</td>
<td>2.06* (2.93)</td>
<td>2.20* (2.80)</td>
<td>2.29* (3.10)</td>
</tr>
<tr>
<td>SEATS $\beta_6$</td>
<td>-0.121 (0.031)</td>
<td>1.29 (0.324)</td>
<td>2.38 (0.571)</td>
<td>3.39 (0.795)</td>
<td>8.04** (2.12)</td>
<td>8.70** (2.22)</td>
</tr>
<tr>
<td>Statistics</td>
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<tr>
<td>AdjR$^2$</td>
<td>0.438</td>
<td>0.445</td>
<td>0.447</td>
<td>0.451</td>
<td>0.645</td>
<td>0.531</td>
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<tr>
<td>F</td>
<td>18.25</td>
<td>18.75</td>
<td>18.90</td>
<td>19.24</td>
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<td>DW</td>
<td>2.29</td>
<td>2.32</td>
<td>2.33</td>
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<td>2.09</td>
<td>1.37</td>
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<tr>
<td>Akaike</td>
<td>5.55</td>
<td>5.54</td>
<td>5.53</td>
<td>5.52</td>
<td>4.99</td>
<td>3.83</td>
</tr>
</tbody>
</table>

*( **),[ ***] significantly different from zero at 1, (5) and [10] percent.
Data Appendix

The economic data come from several sources: Urquhart (1993) and Leacy et al. (1983) for the economic variables in the earliest time period (1870 through 1921); Cansim I and II, the statistical databases maintained by Statistics Canada, for these variables in the later time period (1921-2001); and the political data from Beck (1968) and the official web site of Parliament www.parl.gc.ca for election data. More precise definitions and their sources are given below.

1. Economic variables and data sources:

\[ GNP = \text{gross national product in current dollars. 1870-1926: Urquhart (1993: 24-25) (in millions); 1927-1938: Leacy et al. (1983: 130); 1939–1960 Canadian Economic Observer (Table 1.4), CANSIM D11073 = GNP at market prices. 1961-2001 CANSIM I D16466 = CANSIM II V499724 (aggregated from quarterly data). Note GNP data is not available before 1870 so that GNP numbers were calculated by assuming that the tax size of government remained constant between 1867 and 1869. Since data is available on federal government tax revenue, a value for GNP was implied.} \]

\[ P = \text{GNP deflator before 1927 and GDP deflator after (1986 = 100). 1870-1926: Urquhart, (1993), 24-25; 1927-1995 (1986=100): Cansim data label D14476; 1996-2006 Cansim D140668. All indexes converted to 1986 = 100 basis. The price level was assumed to be constant for the years 1968 and 1969 (to calculate RGNP).} \]

\[ \text{RGNP} = \text{real GNP} = \frac{\text{GNP}}{P} \]

\[ \text{Ln = the log operator.} \]

\[ \text{GROWTH} = \ln \text{RGNP} – \ln \text{RGNP}(-1) \]


\[ \text{USGROWTH} = \ln \text{IPIUS} – \ln \text{IPIUS}(-1). \]

2. Political variables and data sources:

The annual dating of each election year was chosen to reflect the first year that each governing party was in power-- allowing for a period of about one quarter for the new government to settle in office and begin to alter previously established spending patterns (if it so chooses). Hence if an election was held between January and June 30, the election was assigned to the actual calendar year in which the election occurred. If the election was held between July and December, it was attributed to the
following year. There were only two elections in July in the sample period. Because little is accomplished in the summer, and elections in the fall or early winter do not leave enough time for a new government to alter spending programs before years end - the effective date of these late in the year elections is assigned to the following calendar year.

We note that SEATS data differs from the official parliamentary web site for the period before 1945. We have followed Beck (1968) who makes sensible decisions about which small parties support the government and hence which should be counted as part of it. On this basis:

**ELAPSE** = the number of years since the last election.

**ELYEAR** = 1 if an election year; = 0 otherwise; **ELYEAR(1)** = ELYEAR forwarded one year.

**LIBERAL** = 1 if governing party was the Liberal Party; = 0 if any other (more conservative) party.

**SEATS** = percentage of the seats won (or effectively controlled) by the governing party.

**Uncertainty of Election Victory** = (1-SEATS)*ELYEAR(1)

**Cox-Election Hazard** = Cox Proportional Hazard Estimates derived from Ferris and Voia (2009).
References


