Economic Cycles and Canadian Provincial Elections

by Glen E. Barber

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Department of Economics
Carleton University

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Introduction

This paper will examine the effects of economic factors on Canadian provincial elections. Theories of economic voting have progressed considerably over the past half century. Voting theories hinging upon a self-interested and financially motivated group of voters have opened up fields of study investigating how voters may reward governments for favourable economic conditions. We begin by looking at models of voter popularity and incumbent re-election to set the basis for what criteria voters may act on when voting with their pocketbooks. The results found here are mixed.

Over time, much of the attention has been directed to what role incumbent governments play in shaping economic conditions in relation to elections. How do policy-makers change their decisions based on elections, and is it in the best interests of an opportunistic government in the case of an informed public? Looking at works by Rogoff and others we find theoretical models to suggest that even with an informed public, government manipulation may still persist.

Opportunistic governments may appeal to the economic interests of voters through a variety of ways. Policy-makers may aim to shape macroeconomic conditions directly, reducing unemployment or inflation to coincide with imminent elections in so called political business cycles. Early work in this field addressed this issue primarily, and it will be briefly examined in this paper. Results confirming these policy choices in provincial elections were not expected to be present, and largely were not found.

Later work has come to focus on the role of fiscal policies such as government spending, and building upon the methodology of Reid (1996), a number of estimations from provincial data have been collected to test the theory of political budget cycles. The results of this paper indicate the presence of budget cycles in Canadian provincial politics.

Lastly, governments may not need to alter the direction of the economy if through the electoral system the timing of the election is able to be chosen to coincide with the favourable economic outcomes desired by politicians. Do governments time elections early to improve re-election chances? Through probit estimation in STATA, the results presented in this paper again point to yes.

The paper is organized as follows. Section 1 provides a review of relevant literature. Section 2 presents the data and the list of variables to be used in the paper. The basic structure of the Canadian provincial electoral structure is discussed in Section 3. Section 4 provides summary statistics and brief political histories of each of the ten provinces. Feel free to read the material of this section at your convenience as it is not crucial to the analysis presented in the rest of the paper. Section 4 is accompanied by Table A, which is a summary table outlining the mean values of the variables used in the provincial summaries. Section 5 presents preliminary findings of economic-electoral relationships and reports the results of popularity function and re-election probability estimations. Section 6 discusses voter preferences and outlines a theoretical framework for rational-voter competency models. Section 7 examines the presence of political business cycles in the Canadian provincial context and presents a test for opportunistic timing in the endogenous election model. Section 8 presents two tests of the effects of fiscal policy instruments under the political budget cycle model. Section 9 presents concluding remarks, followed by a bibliography.

Literature Review

The role of macroeconomic variables, fiscal policy, and election timing has for many years been a widely

studied topic by scholars of both economics and political science. Over thirty years ago, early scholars in

the field, such as Nordhaus, Tufte, and Fair, all proposed ideas of political business cycles that address

cyclical changes in macroeconomic variables, such as inflation and unemployment, that revolve around

the timing of government elections in numerous countries. Much of the early research was based on

elections at the federal level, with cross-country comparisons often providing additional sources of data.

The empirical evidence was at times sporadic, but the general consensus was that unemployment is

driven downwards in periods leading up to elections and rises back upwards following them. Lewis-Beck

and Paldam explore the evolution of early works in the field and provide well-structured overviews into

research on voting and popularity functions. All of these early works shared the basic theoretical

framework of the *opportunistic model*, in which incumbent governments act opportunistically to

improve their chances of re-election through their use of public policy instruments. At the same time,

voter preferences were originally characterized by the *responsibility hypothesis*, according to which

voters would reward the incumbent party for positive economic conditions at the time of the election

and punish the incumbent for poor economic performance. Voters were modelled as being myopic and

not forward looking. Work by Rogoff and Sibert in 1988 and 1990 introduced new models of rational,

forward-looking voter preferences based on competency signalling by incumbent governments under a

framework of asymmetric information. Further research, begun by Hibbs in 1987 and continued at

length by Alesina, Roubini and Cohen, developed models that address how ideological differences

between party platforms, rather than homogenous re-election seeking incumbents, may shape economic

cycles. This work has focused on the role of fiscal policy by incumbent governments in

relation to elections. Contemporary works by Drazen, Kneebone, and Tellier have all focused on the role

of fiscal policy in shaping political budget cycles, primarily through partisan effect models. This recent

work of Kneebone and Tellier shares particular relevance to this paper, since it specifically examines

data from Canadian provincial elections, as does contemporary work by Reid, who in addition to fiscal

effects under a opportunistic model looked at the effect of electoral timing. Recent work in 2008 by

Ferris and Voia has examined the effect of opportunistic election timing in Canadian federal elections.

Lastly, a synthesis and study of the related effects between opportunistic electoral timing and fiscal

policy manipulation was done by Kayser in 2005.

Data

The variables to be used for tests and summary statistics are displayed in Table 1 below. Annual observations were gathered for provincial data over the time period of 1981 to 2009. From these a pooled time series cross-sectional data set was created, with 29 annual observations in each of the ten provinces for 290 total observations. The use of lagged values in the estimation of Equation (3) resulted in the loss of the 1981 and 1982 observations and the loss of the 1983 observations as well in the estimation of equation (4), reducing the datasets to 270 and 260 respectively. Of 290 observations, 76 were election years. This pooling of provincial data results in a much larger sample size then most similar work that has analyzed elections at the federal level.

The data were assembled from multiple sources. Electoral information pertaining to legislative seats, popular vote, party information, the composition of legislatures, and the timing and results of elections were all collected online from the databases of *https://www.electionalmanac.com*. Data pertaining to income and all components of government expenditures and revenues came from Statistics Canada's *Provincial and Territorial Economic Accounts: Data Tables*, catalogue number 13-018-X; specifically Tables: 1, 8, and 18. Price Indices, provincial population, and employment data also came from Statistics Canada, from the CANSIM database; tables: 383-0008, 384-0036, and 282-0087.

Table 1. Variable Definitions

◆◆	=	annual rate of change in per capita provincial Gross Domestic Product, also referred to as DGDPPC

UR   =   provincial unemployment rate

             =   annual rate of change in the provincial Gross Domestic Product price deflator,

                   also referred to as DGDPDEF

ELECDUM   =   a (0, 1) dummy variable indicating the presence or absence of a provincial

                   government election in any year (0 for an election, 1 for an election)

PERSEAT   =   percentage of seats held by the incumbent government at the time the election

                   is called

GOV_PSEATS   =   percentage of seats held by the governing party while in office

POPVOTE   =   percentage of the popular vote held by the incumbent government at the time

                   the election is called

INC_PVOTE   =   percentage of the popular vote obtained by the incumbent government party

MINORITY   =   a (0, 1) dummy variable indicating the presence of a minority government (0 for

                   a majority government, 1 for a minority)

FED   =   a (0, 1) dummy variable indicating whether the incumbent party was the same

                   party as the federal government

CHANGE = (0, 1) dummy variable indicating whether the incumbent political party was in its

first term in office

RIGHT = a (0, 1) dummy variable indicating whether the incumbent party were the

Conservative Party: 1 for Conservative, 0 otherwise

LIBERAL = a (0, 1) dummy variable indicating whether the incumbent party were the

Liberal Party: 1 for Liberal, 0 otherwise

LEFT = a (0, 1) dummy variable indicating the political stance of the incumbent party (0

for parties on the center and right of the political spectrum, 1 for parties on the

left). Parties on the left were defined to be the New Democratic Party and the

Parti Quebecois (PQ).

GOV_RELECT = a (0, 1) dummy variable indicating whether the incumbent government was

re-elected, 1 for re-election

ELAPSE = number of years since the last provincial election

Δ = annual rate of change in provincial unemployment rate, also referred to as DUR

DDEF = annual rate of percentage change in provincial deficit, (-) indicating a deficit,

(+) indicating a surplus

GGS = annual rate of change in real per capita provincial government purchases of

goods and services

TRP	=	annual rate of change in real per capita provincial government transfers to persons excluding interest payments
TRB	=	annual rate of change in real per capita provincial government transfers to business
GI	=	annual rate of change in real per capita provincial fixed capital purchases
EXP	=	annual rate of change in the sum of the four real per capita expenditure items
REV	=	annual rate of change in real per capita provincial government non-borrowed revenue net of federal transfers
ELECPROB	=	the conditional probability of an election being called in any given year created by the fitted values of the probit regression of equation 3
ELECT_*	=	Where *={1,2,3,4}; indicating the length of time since the prior election

Electoral System

Canada is a parliamentary democracy divided into jurisdictions of federal, provincial, and municipal levels

of government. Each level of government includes elected bodies of representatives called legislatures.

Elected representatives of the legislature at the provincial level are known as Members of Provincial

Parliament, or MPP's. Legislatures have the power to draft, amend, pass, and repeal laws. Upon each

election, the legislature appoints a group of members to act as the executive branch of government,

which is tasked with organizing the operations of government. The executive is led by a single member

appointed by the legislature, which at the provincial level is the premier. The executive body and the

premier are appointed by the governing party or coalition. Canadian legislatures each have a multi-party

system in which multiple political parties are able to run and hold government office, either individually

or as a coalition. As a result, governments are formed according to a simple plurality, known as the 'first

past the post' method, in which the party that controls the most number of seats in the legislature forms

the government, which may or may not be an absolute majority of 51% of the seats. A government

formed by a party with less than an absolute majority is called a minority government. At the provincial

level, Canadian provinces have a unicameral legislature, meaning that

there is not a provincial senate, and bills passed by the legislature become law. All bills in the legislature

are presented by the government and are considered confidence motions, meaning that if any bills

should not pass, then constitutionally, in accordance with the *Constitution Act of 1867* and subsequently

section 4 of the *Canadian Charter of Rights and Freedoms*, elections must be held at the provincial level

at least every five years.

Summary Statistics and Historical Overview of Political Trends

Alberta

Alberta is notable for its conservatism, which is characterized by a series of right-wing governments throughout the twentieth century. From 1935 to 1970, Alberta was governed by the Social Credit party, a ideologically Christian and socially conservative party notable for its passing of many controversial bills aimed at government control of banks, alternative monetary policy through the distribution of prosperity certificates, and limits on the sale of alcohol. Since 1971 to the present day, and for the entirety of the data in this paper, 1981-2009, Alberta has been governed by the Progressive Conservative Party, winning re-elected majorities in all its elections. In its history, Alberta has never elected a minority government, as seen with the mean value of the variable MAJORITY taking on the value of one (Table A). In most of these elections, the Progressive Conservatives have received a strong mandate by winning overwhelming majorities, a trend not seen in the rest of Canada. From our summary statistics, we can see that on average the PC's held 78% of the seats. This varies substantially with the percentage of the popular vote they received. The mean of the variable INC_PVOTE is more than 25% lower, and we can observe that although the Conservatives always held the majority of seats, at times they received less than 50% of the popular vote. This trend is more pronounced in Alberta then in the rest of Canada and could indicate the possible presence of gerrymandering, whereby the zoning arrangement of electoral districts plays a role in explaining electoral results, typically in favour of the incumbent. The official opposition has been the Liberals, with the NDP trailing in a distant third. Elections have taken place at fairly regular intervals of three or four years.

Economically, Alberta has seen strong growth in investment and government revenues over the past thirty years, in large part driven by the oil and natural resources sector, which accounted for the majority of exports. Much of this additional revenue has been used in repaying the provincial debt.

Alberta has mostly maintained surpluses and recently eliminated the provincial debt. This can be seen by the variable DDEF, indicating the yearly percentage change in the deficit, where a positive coefficient value indicates a surplus. Alberta has also had one of the lowest unemployment rates (see Figure A), with a mean of 6.9%, and is one of the lowest-taxed provinces.

British Columbia

British Columbia has seen a number of different political parties elected to govern, as well as a mix of majority and minority governments over its history. Since 1981, all of the governments have been majorities. From 1975 to 1990, British Columbia was governed by The Social Credit Party, followed by a ten-year reign of the NDP from 1991 to 2001, and Liberal governments from 2002 to 2009. Of seven elections in British Columbia during the sample period, five saw the incumbent re-elected, resulting in an approximate probability of re-election of 71%, shown by the coefficient of the variable GOV_RELECT.

British Columbia has been unique in its history of adoption of alternative voting systems. In its 1952 election, B.C. adopted a preferential voting system of ranked ballots, leading to an unexpected minority government that would only last nine months. British Columbia is also the only province with ballot initiatives and recall election legislation following a 1991 referendum. However, since then the only use of the legislation has been a recall petition in 1998 prompting the resignation of a member of the legislative assembly. As well, in 2001 British Columbia was the first province to institute legislation mandating fixed election dates of every four years. Prior to this, British Columbia had a slightly less regular election cycle, with terms of government ranging from three to five years, shown the mean value of 4.3 for the variable LENGTH.

British Columbia, similar to Alberta, has a large base of the economy driven by natural resources, namely forestry and mining, which historically has led to a pattern of boom and bust cycles. This pattern may explain in part the comparatively high mean unemployment rate of just over 9% and the broader range

between the minimum and maximum values. We can also see a trend of the accumulation of greater

provincial debt, shown by the large negative coefficient of DDEF. This growth in provincial debt,

however, may be partly explained by the Vancouver 2010 Olympics, which resulted in the construction

of large infrastructure projects that may have been partly paid for through provincial debt.

Manitoba

Historically, prior to the First World War, Manitoban politics were characterized by either Liberal or

Conservative governments, followed by successive wins during the interwar period by an agrarian and

labour-oriented United Farmers Party. Since the Second World War, Manitoba has been mostly governed

by the NDP, winning five out of eight elections in our sample period, with an interim of the Conservatives

winning three elections and ruling throughout most of the 1990's. Manitoba has tended to see close

races, a divided vote share amongst parties, and changes in governing party. Governing parties have

often received slim majorities of seats, shown by an mean government percentage of seats,

GOV_PSEATS, of 55%. The percentage of the popular vote received by the government has also tended

be low due to the fragmented vote share among the three major parties, with a mean of under 50%. Of

the eight elections, seven were majorities, and only five out of eight elections resulted in the

incumbent's re-election. Manitoba has had moderate variability in the length of government terms

before an election, ranging from two to five years. Notably, the 1988 election was called two years into

the NDP's term after a confidence motion budget failed to pass and resulted in the incumbent NDP's

defeat. The resulting legislature was fragmented between the three major parties with the Liberals

becoming the official opposition for that term and the Conservatives forming a minority government. In

2008, Manitoba passed legislation enacting a fixed election date of every four years starting in the 2011

election.

Manitoba has had quite modest unemployment, a mean rate of 6.7%, and modest growth in real per capita gross domestic product from 1981 to 2009, albeit starting from a lower point than some other provinces. Manitoba had a mean yearly unemployment increase of only 0.45% in the sample period, and the unemployment rate only varied between a narrow range between 4.2 and 9.5%. Manitoba had moderate increases in its debt accumulation as well as a comparatively large increase in government program expenditures.

New Brunswick

New Brunswick's political landscape has been virtually entirely dominated by the Liberals and the Conservatives since its formation. There has been a general absence of third party and independent representatives in New Brunswick's parliament, with the NDP occasionally winning one seat and a break-off Conservative party briefly occupying eight seats in the 1991 election. Since New Brunswick politics has been dominated by two parties, this has led to a history entirely made up of majority governments. Often governments will have large seat majorities, including a sweep of all the seats by the Liberals in the 1987 election. As well, the government has often changed back and forth between parties, with a fairly low incumbency re-election probability of 57%, especially given only two contending parties. The length of government terms has been fairly consistently four years, with one three-year term and one five-year term in the sample period. New Brunswick enacted legislation for election to be held every four years in 2007.

New Brunswick has had perennially high unemployment, with a mean of 11.6% and a high of over 15%, characteristic of the Maritimes. That being said, unemployment in New Brunswick has overall been on a slight decline over the sample period, hitting a high in the mid 1980's but declining afterward and only rising again in 2008 and 2009. New Brunswick has accumulated greater debt and often run operating deficits while increasing program expenditures.

Newfoundland and Labrador

Although Newfoundland is one of the oldest North American settlements, it was the last Canadian province to join Confederation, doing so in 1949. The politics of Newfoundland have tended to be polarized, splitting between Liberals and Conservative governments. Since the legislatures have tended to be composed almost entirely of the two parties, this has led to all majority governments, and often governments with strong majorities. Given the competition between the two parties, and accompanied by religious differences, the elections have tended to be hotly contested, despite relatively similar policy platforms between the two parties. Newfoundland tends to re-elect their incumbents, with a re- election percentage of 75%, second only to Alberta. The province tends to have elections every three or four years. In 2004, legislation was passed fixing election dates to be every four years.

Newfoundland has experienced a depressed economy compared to most Canadian provinces. Newfoundland has had the highest unemployment rate throughout every year of the sample period, with a mean unemployment of 17% and a high of over 20%. At the same time, Newfoundland has experienced the unique trend of lowering population due to emigration, especially following the collapse of the cod fishing industry in the early 1990's. The province has tended to operate large deficits and has increased government collections of revenues the most on average per year of any province. These trends have undergone a relative reversal in the mid and late 2000's, with oil and gas revenue stimulating the economy and resulting in government surpluses in recent years.

Nova Scotia

Unlike some other Maritime provinces, Nova Scotia's political landscape is closely divided among three major parties, The Liberals, the NDP, and the Conservatives. Due to regional boundaries of ridings, regional party affiliations tend to be solidly rooted. This three-way split results in difficulties electing majority governments, and numerous governments have been formed by coalition. Still, seven of the

nine governments in our sample period were majorities, but the lowest majority percentage of the provinces. Despite the split composition, incumbents have been re-elected reasonably often, with the Conservatives governing throughout the entire 1980's and for three consecutive terms in the 2000's. Nova Scotia has had the most varied election times, varying between one and five year legislative terms. No legislation has been passed to fix election dates.

Nova Scotia has a low income per capita compared to most other Canadian provinces, despite above average mean growth in GDP per-capita. At the same time, Nova Scotia has experienced fairly high inflation, averaging over 3% inflation per year. The province has had above average unemployment of over 10%, albeit the lowest of the maritime provinces. Over the sample period Nova Scotia did not increase real per capita government spending by much but did significantly increase its collection of real per capita government revenue.

Ontario

From 1943 to 1981, Ontario was governed by twelve consecutive Conservative governments, colloquially known as the Big Blue Machine. Since then, the governments have fluctuated fairly often, with all three major parties holding majorities at one point. Governments over the sample period stood the lowest chance of re-election of all provinces, with incumbents winning re-election only half the time. All of the eight governments have been majorities with the exception of one, a Liberal-NDP coalition formed from the 1985 election. The NDP governed for one term, following the unexpected collapse of the Peterson Liberal government in an early snap election in 1990. The length of term and timing of elections has varied in Ontario, ranging from two to five years. In 2005, legislation was passed fixing election dates to every four years.

Ontario is Canada's largest economy, over doubling the second largest. The province's economy is mainly comprised of the service sector and manufacturing. Ontario has had modest unemployment of under 8%, lower than the Canadian average, yet has experienced numerous deficits, at times large ones.

Prince Edward Island

Prince Edward Island has the purest two-party system of all Canadian provinces, with the Conservatives and Liberals winning every legislative seat in the province's history, with the exception of seat won by the NDP in 1996. The province is also unique in that due to its small population and large legislature, it has some of the smallest ridings, with each riding representing approximately 5,000 people. As well. voter turnout is the highest by a large margin. Due to the de-facto two-party system, all governments are majorities, and although electoral ridings are very closely contested and the popular vote closely split, it is common for there to be large legislative majorities, the maximum being 96% of the legislative seats.   In 1993, the Liberals formed the government and won all but one seat, and then in 2000 the situation reversed and the Conservatives did the same. Elections have taken place regularly between three and four years. In 2008, legislation was passed fixing elections every four years.

The economy of Prince Edward Island is driven by the seasonal industries of agriculture, fishing, and tourism. P.E.I. has one of the highest provincial sales tax rates in the country. P.E.I. has had high average unemployment of over 13%, in part due to the seasonal nature of many industries.

Quebec

Since 1981, Quebec has been governed by the Liberal party and the Parti Quebecois, with the two parties winning most legislative seats. A brief surge of 41 seats was won by the Action Démocratique de Quebec party in 2007, only to be lost back in the ensuing election of the following year. Neither the NDP nor the Conservative party play a role in modern Quebec provincial politics. All but the 2007

election have been majorities, and an election occurred the following year, with a Liberal majority returning. Politics of Quebec can tend to be fairly competitive and close, with the average percentage of seats, percent of the popular vote, and re-election probability all below the Canadian average. Quebec has been unique in its separatist movement, a political ideology advocating Quebec independence from the Canadian federation. The province has held two referendums on the issue under PQ governments, first in 1980 and then in 1995; both referendums failed. Quebec has varied election times between a year and five years.

The economy of Quebec is the second largest in Canada, but per-capita GDP has tended to grow slower and remains lower than the Canadian average. Unemployment in the province has been the highest of non-Maritime provinces, with an average over 10% and a high of 14%. In recent years, the province has faced growing debt and now faces the worst credit rating and highest debt as a percentage of provincial GDP of all the provinces.

Saskatchewan

Prior to the Second World War, Saskatchewan was governed by successive Liberal governments. After the war, under the leadership of premier Tommy Douglas, the province was governed by a left-wing party called the Cooperative Commonwealth Party. The CCP introduced provincial Medicare, and Tommy Douglas would later go on to federal politics, starting the New Democratic Party, a name which the CCP adopted in 1961. The Liberal and Conservative Parties are no longer active in Saskatchewan provincial politics. The Conservative party governed back to back following wins in the 1982 and 1986 elections, but have not ran a candidate in a provincial election since 1995. Since then, the provincial legislature has been governed by the NDP and, starting in 2007, a right-wing party called the Saskatchewan Party, which was formed from prior Liberal and Conservative provincial politicians. All seven elections have been majorities, but incumbents have only won re-election in four out of those

seven elections. Legislative terms tend to go close to their mandate in Saskatchewan, ranging between four and five years. Legislation was passed in 2007 fixing elections to be every four years.

Saskatchewan has had the lowest average unemployment over the sample period 1981-2009, with a mean of 6.3% and a high of only 8.3% unemployment. The province was traditionally known for its agricultural industry, but has seen other natural resources industries like potash, uranium, oil, and forestry overtake faming.

Figure A
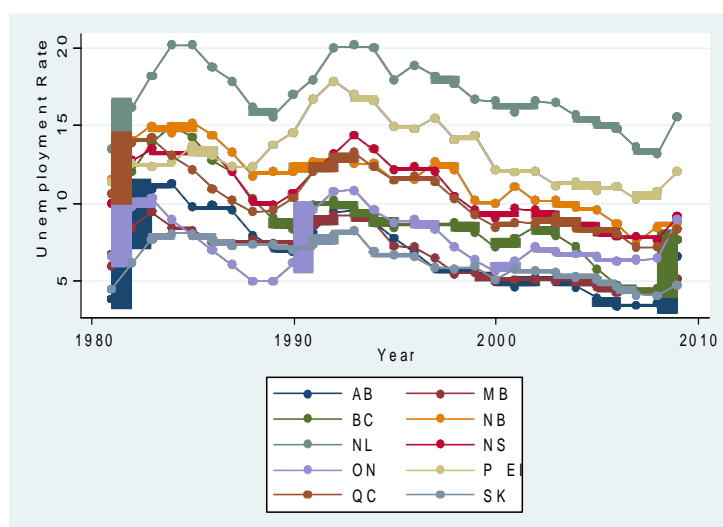
Table A: Summary Statistics 1981-2009 (Means)

		AB	BC	MB	NB	NL	NS	ON	PEI	QC	SK	Canada
GOV_PSEATS		78.19	66.00	55.35	73.72	72.10	61.87	61.07	80.78	65.26	66.87	68.12
GOV_PVOTE		51.69	46.86	44.76	50.22	54.24	43.98	43.28	53.96	47.37	47.24	48.36
GOV_RELECT		1.00	0.71	0.63	0.57	0.75	0.67	0.50	0.63	0.63	0.57	0.67
MAJORITY		1.00	1.00	0.93	1.00	1.00	0.76	0.93	1.00	0.97	1.00	0.96
LENGTH		3.62	4.28	3.75	4	3.5	3.44	3.75	3.5	4	4.14	3.8
DGDPPC		3.45	3.44	4.01	4.85	5.62	4.71	3.77	4.69	3.99	4.31	4.28
DGDPDEF		2.49	2.79	2.74	2.83	3.12	3.01	2.72	2.84	2.74	2.72	2.80
UR		6.87	9.05	6.72	11.64	17.08	10.91	7.64	13.28	10.43	6.32	9.99
DDEF		62.33	-254.24	-45.82	-265.32	-228.07	50.97	-37.36	30.26	13.34	-253.56	-93.86
EXP		3.46	1.17	2.59	2.40	2.44	1.51	2.44	1.99	2.05	1.69	2.18
REV		1.75	0.45	3.13	5.42	14.78	5.08	1.23	2.80	3.03	3.97	4.17

Preliminary Findings: Popularity and Incumbent Re-election Functions

How do voters make their decisions when casting their ballots? Some voters will invariably be committed supporters of one particular party; for example, a voter may have an ideological predisposition towards a style of government, be it big government or small, right wing or left wing, socially liberal or conservative. There may also be voters who vote entirely based on specific issues that are important to them, be it gun control, religious school funding, or abortion. Still other voters may have personal connections to one or more of the candidates, such as through a distant familial relation or as a co-member of a religious, academic or social institution. It is certainly also possible that the voter simply received a positive impression of a candidate from a brief meeting or discussion with that candidate or with a member of his or her campaign staff during the campaigning process, or alternatively a negative impression of a candidate's opponent.

In all of the above cases, voters have decided for a candidate based on a variety of personal reasons. To a politician these issues are, of course, central. Other voters, however, may make political choices for candidates based more on financial motivations. These voters may exhibit decision-making characteristics based on self-interest and may vote based on observable, quantitative criteria of perceived personal benefit.

Early work by Nordhaus (1975), Tufte (1980), and Fair (1978) suggest that voter expectations of future economic well-being are tied to recent economic performance; for better or worse, the current and recent economic situation is perceived to be connected to the incumbent government, a phenomenon referred to as the responsibility hypothesis by Lewis-Beck and Paldam (2000).

Early research into the use of policy tools to create political business cycles is underpinned by these assumptions regarding favourable electoral outcomes in the case of positive economic indicators. More recent research has moved away from the view that voters simply reward incumbents for positive

economic conditions and instead base economic voting criteria on government competence, primarily observed through fiscal policies. Nevertheless, economic theories regarding optimal election timing strategies still tend to reflect decisions based on electoral timings that coincide with favourable economic indicators and positive fiscal conditions. Research underlying these principles follows from *Voting and Popularity Functions*, estimations of voter intention and election probability based on economic indicators.

This section will examine the assumed positive relationship between positive economic conditions and electoral success in our provincial dataset. The section will begin by applying the early methods of Fair and Tufte and continue by estimating a series of voting and popularity models using control variables accounting for fiscal policy, political mandate, provincial difference, and electoral timing. The results of other sections are not contingent on these results, as the tests have been generally structured otherwise, but theoretically consistent findings would be complimentary.

We can begin by creating a variety of crude measures using the methodology in Fair (1978) to look at the theory that incumbent governments will see more favourable electoral results in periods of positive economic conditions. We can first examine the yearly provincial percentage growth rate of output per person (DGDPPC) in the year of the election as a measure of how well the economy is doing and using the percentage of the popular vote obtained by the incumbent government (INC_PVOTE) as a measure of electoral success. Figure 1-1 is a graph of the incumbent party vote share plotted against the provincial growth rate for 72 provincial elections in ten provinces[1] between 1982 and 2009. For the theory to be correct, we should see an upward trend among the variables on the two axes. Visually this seems to be weakly consistent, with the exception of the two outlying observations of extreme negative GDP growth. It is possible that in cases of extreme negative output growth a reverse trend occurs, but

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[1] Those provinces are Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Quebec, Prince Edward Island, and Saskatchewan.

conceptually this is unlikely, and these points appear to be outliers.   Although we have numerous years

with negative output growth, all of the observations except two are within negative 2%. If we consider

situations with only positive or slightly negative output growth, we find results more consistent with the

responsibility hypothesis. With 72 electoral observations, we find weak indication to suggest that in

provincial elections that are experiencing positive or only slightly negative yearly output growth, higher

growth rates may influence positive electoral results for the incumbent.

Another measure of economic well-being we could look at is inflation. Historically, periods of inflation

have tended to cause unease about the economy, see Fair (1978). Workers may become concerned that

their income will not rise as fast as the cost of living, and creditors and businesses may be concerned

that the value of their investments will be undermined. Financial planning for the future could become

more uncertain. Figure 1-3 is a graph of incumbent vote share plotted against the yearly percentage

change in the provincial GDP deflator (DGDPDEF) for 74 elections. From the graph, it appears visually

that the points are more or less randomly distributed. We again see two outliers in cases of extreme

deflation. If we continue by looking only at election observations where inflation is positive (Figure 1-4),

we again do not see any clear negative trend. If we regress the yearly percentage change in the GDP

deflator onto the incumbent vote share, however spurious this regression may be, we even find the

coefficient attached to change in inflation to be positive, as opposed to the theoretically predicted

negative.

There are some points to consider when thinking about these results. The dataset of election years only

is not huge, and inflation was virtually never very high: of 70 electoral year observations, only four were

over 10%, with the majority of the observations falling densely between zero and 5%. We find the implicit

price index measure of inflation generated from the provincial gross domestic product to be similar with

provincial the consumer price index. Figure 1-5 shows incumbent vote share plotted against

the yearly percentage change in the provincial consumer price index (DCPI). Again, from visual observation there does not appear to be any relation, and upon regressing the two variables we find DCPI to have a positive coefficient, confirming consistent, albeit confusing, results with the GDP deflator.

One of the variables that receives the most attention in relation to voter decision-making is unemployment rate. Employment is one of the more observable macroeconomic variables, even to laymen voters who pay little attention to other economic trends. If a voter is out of work, it would be very reasonable for that circumstance to play a strong role in shaping his or her view of the economy. Typically, as stewards of the economy, a period of high unemployment would tend to indicate a poor handling of the economy by the incumbent, and we would expect to see a negative relationship between unemployment and incumbent vote share. Figure 1-6 is a graph of incumbent vote share plotted against the provincial unemployment rate (UR). The expected pattern of a downward sloping trend does not appear to be evident, instead we observe a weak upward trend.

Figure 1-1 Incumbent Vote Share vs Growth Rate of GDP

Figure 1-2 Incumbent Vote Share vs Growth of GDP
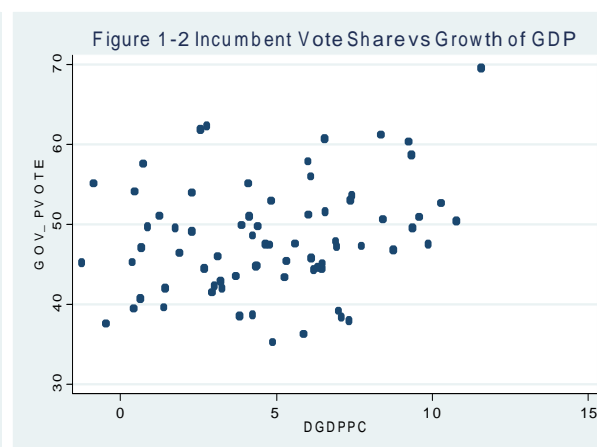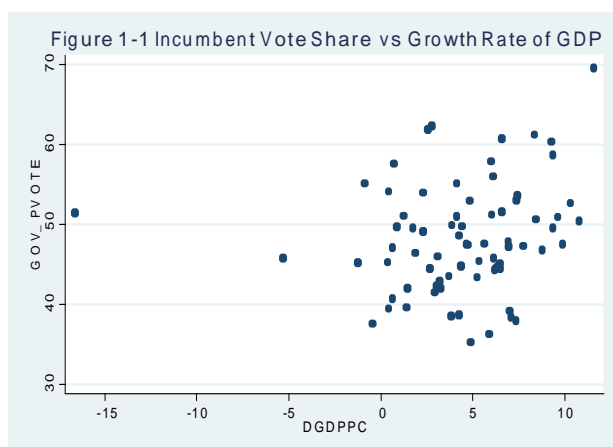
Figure 1-3 Incumbent Vote Share vs Change in GDP Deflator
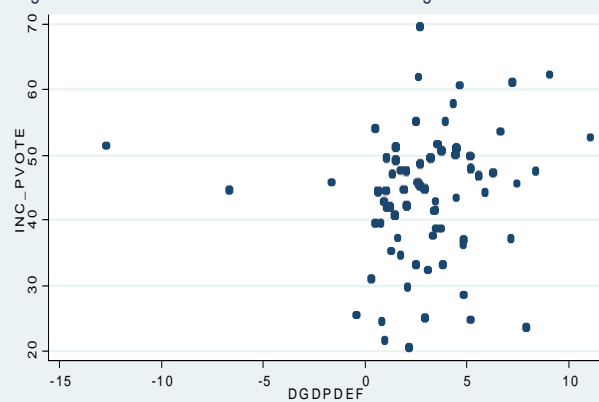
Figure 1-4 Incumbent Vote Share vs Change in GDP Deflator
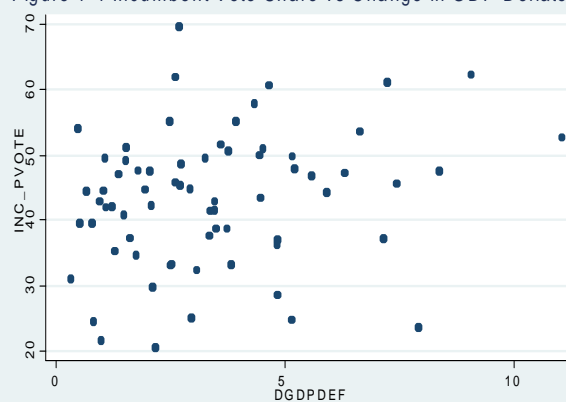
Figure 1-6 Incumbent Vote Share vs Unemployment Rate
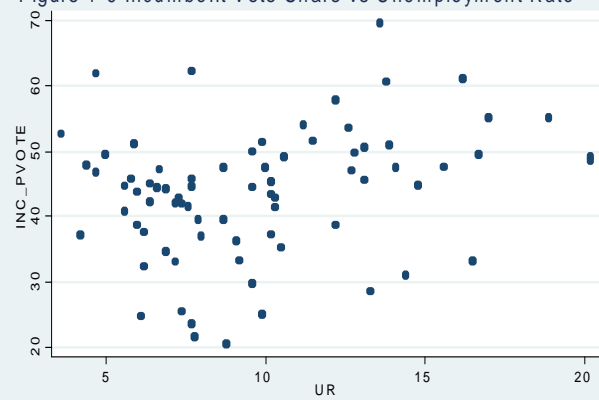
Fair's methodology is not adequate for our case of provincial multi-party elections. A series of models are required that estimate the dependent variable percentage of the popular vote, INC_PVOTE, and the votes obtained by an incumbent in a re-election, adding additional controls to account for other explanatory factors. All models included nine provincial dummy variables to account for provincial difference, with Alberta used as the base case, and roust standard errors were used in the eleventh version of STATA. The results for all linear models are reported in Table A.

Model A estimates the effect of unemployment rate, annual change in output, and provincial inflation as well as the lagged values of each variable by one. We find current unemployment to be negatively

correlated with popular vote, but we find the prior year's inflation rate and unemployment rate to be positively related to popular vote.

Model B adds control variables accounting for the political mandate of the incumbent party. None of the political variables are found to be significant, but we find consistency between the estimates of the macroeconomic variables between Models A and B.

Model C adds control variables accounting for fiscal policy instead of political mandate. None of the variables are significant, and only lagged inflation remains significant and its coefficient is lowered. The signs of the unemployment and output coefficients remain the same.

Model D includes four dummy variables accounting for electoral timing to Model B. ELECT_3 and ELECT_4 are significant at improving incumbent popular vote. Only lagged inflation remains significant.

Model E includes all control variables to account for timing, fiscal policy, and political mandate. Only the two timing variables and lagged inflation are significant. The linear models have produced mixed results. The current unemployment rate is negatively correlated with popular vote, supporting the responsibility hypothesis. However, lagged unemployment does not support the hypothesis, and curiously moves in the opposite direction of current unemployment. Lagged inflation robustly does also not support the hypothesis.

<u>*Table A*</u>: Linear Estimates of Popular Vote Equations (t values in parentheses)

Variables	Model A	Model B	Model C	Model D	Model E (Full)
observations	69	69	69	59	59
$\diamond\diamond^2$	0.49	0.55	0.52	0.78	0.81
UR	**-2.73***	**-2.52***	-2.47	-1.52	-2.16
	(1.85)	(1.69)	(1.20)	(0.92)	(1.24)
$\diamond\diamond\diamond\diamond_{\diamond\diamond}$	**2.79***	**2.62***	2.62	2.31	2.98
	(1.88)	(1.71)	(1.22)	(1.43)	(1.69)
$\diamond\diamond$	-0.53	-0.51	-0.83	-0.38	-0.69
	(1.27)	(1.11)	(1.33)	(0.86)	(1.18)
$\diamond\diamond_{\diamond\diamond-1}$	-0.63	-0.60	-0.40	-0.17	-0.03
	(1.42)	(1.27)	(0.75)	(0.36)	(0.05)
	-0.03	0.08	0.42	0.11	0.32
	(0.05)	(0.14)	(0.56)	(0.21)	(0.49)
$\diamond\diamond_{\diamond\diamond}$	**1.72****	**1.71****	**1.36****	**1.61****	**1.72****
	(3.84)	(3.50)	(2.02)	(2.93)	(2.17)
$\diamond\diamond\_\ \diamond\diamond\ \diamond\diamond\diamond\diamond_{\diamond\diamond-1}$	-0.00	.		0.04	0.14
	(0.05)	.		(0.30)	(0.79)
$\diamond\diamond_{-1}$	5.72	.		-3.00	-6.12
	(1.48)	.		(0.50)	(1.01)
FED	-0.24	.		3.37	3.13
	(0.10)	.		(1.39)	(1.03)
CHANGE	2.80	.		3.63	4.91
	(0.80)	.		(1.18)	(1.43)
RIGHT	3.70	.		0.66	0.10
	(0.98)	.		(0.20)	(0.03)
LIBERAL	5.22	.		3.43	3.18

	(1.50)	.	(0.85)	(0.64)
GGS	0.50	.		-0.00
	(0.44)	.		(1.00)
TRP	0.12	.		0.02
	(0.42)	.		(0.08)
TRB	0.03	.		0.01
	(0.59)	.		(0.21)
GI	0.08	.		-0.01
	(0.56)	.		(0.09)
EXP	-0.79	.		-0.26
	(0.52)	.		(0.16)
��$_{-1}$	-0.16	.		0.10
	(0.51)	.		(0.28)
REV	0.01	.		0.01
	(0.26)	.		(0.34)
��$_{-1}$	-0.07	.		-0.12
	(0.67)	.		(1.26)
ELECT_1			4.29	2.49
			(0.54)	(0.28)
ELECT_2			-9.18	-7.14
			(1.16)	(1.10)
ELECT_3			**8.20****	**10.19****
			(2.35)	(2.53)
ELECT_4			**8.60****	**9.22****
			(2.97)	(2.51)

*Significant at the 90% level

**Significant at the 95% level

To compare the linear estimations of electoral success, similar tests were conducted estimating the dependent variable GOV_RELECT, a binary variable indicating whether the incumbent was re-elected. The model was estimated using probit estimation, and except for Model A included the same nine provincial dummy variables and used robust standard errors. The probit estimations found more significant results, and largely confirmed the results of the linear estimations. The results can be seen in Table B.

Model A estimated the three macroeconomic variables without the addition of control variables for the provinces and found the same results as the linear estimation but with smaller coefficients.

Model B included the nine provincial control variables to Model A, with consistent results and increasing the magnitude of the coefficients.

Model C introduced variables to control political mandate to the three macroeconomic indicators onto Model B. The model found parties are more likely to be re-elected than elected, more likely to be elected if the same party as the federal government, and more likely to be elected if Liberal. The results for unemployment were consistent, and increased still in magnitude. Lagged inflation ceased to be significant.

Model D incorporated fiscal policies to Model B. The unemployment results were consistent. Annual output growth had a significant and negative relationship to incumbent re-election. All of the fiscal policy variables were significant except transfers to business and the lagged values of revenues and expenditures. The signs of the spending coefficients were consistent with the theoretical hypothesis but the sign of spending had an unexpected sign.

Model E included timing variables to model B and significantly found that incumbents holding elections in their second years are less likely to win re-election and those holding elections in the third and fourth year of their terms are more likely to win.

<u>Table B:</u> Probit Estimation of Incumbent Re-Election Equations (z values in parentheses)

Variables	Model A	Model B	Model C	Model D	Model E
observations	69	69	69	69	61
Pseudo R^2	0.07	0.17	0.47	0.33	0.46
UR	**-0.40***	**-0.54****	**-0.71****	**-1.00****	**-0.78****
	(1.95)	(2.06)	(2.44)	(2.76)	(1.99)
◇◇◇◇$_{◇◇}$	**0.41****	**0.57****	**0.77****	**1.00****	**0.86****
	(1.99)	(2.27)	(2.73)	(2.77)	(2.14)
	-0.10	-0.14	-0.03	**-0.38****	-0.10
	(1.37)	(1.38)	(0.35)	(2.39)	(0.88)
◇◇$_{◇◇-1}$	-0.08	-0.91	-0.12	-0.13	-0.07
	(1.33)	(1.15)	(1.29)	(1.09)	(0.84)
	0.01	0.01*	-0.03	0.14	-0.25*
	(0.17)	(1.85)	(0.19)	(0.84)	(1.82)
◇◇$_{◇◇}$	**0.17****	**0.15***	0.18	0.21	0.14
	(2.27)	(1.85)	(1.51)	(1.49)	(0.16)
◇◇$_{-1}$			-0.99	.	.
			(1.20)	.	.
FED			**1.55****	.	.
			(2.18)	.	.
CHANGE			**3.32****	.	.
			(4.35)	.	.
RIGHT			1.25	.	.
			(1.51)	.	.
LIBERAL			**1.50****	.	.
			(1.99)	.	.

GGS	**0.51***	.
	(1.70)	.
TRP	**0.10***	.
	(1.72)	.
TRB	-0.00	.
	(0.26)	.
GI	**0.05***	.
	(1.70)	.
EXP	**-0.79****	.
	(2.06)	.
$\Diamond\Diamond_{-1}$	0.01	.
	(0.21)	.
REV	**0.04***	.
	(1.72)	.
$\Diamond\Diamond_{-1}$	0.00	.
	(0.30)	.
ELECT_1		1.55
		(1.28)
ELECT_2		**-4.51****
		(5.74)
ELECT_3		**3.02****
		(3.25)
ELECT_4		**2.53****
		(3.21)

*Significant at the 90% level

**Significant at the 95% level

Voter Preferences

Perception of voter preference and decision-making underlies all research into political business cycles.

At the same time, certain assumptions are also made regarding the intent and goals of politicians. Early

work in the field of political business cycles outlined a model of voter decision-making that emphasized a

broadly naïve public and an opportunistic incumbent government.   As summarized by Beck (1988, pg.

138), assumptions of early models often include the following:

With regard to government:

1. The goal of governments is to win re-election

2. The government can set the unemployment rate at a desired level[2]

3. Governments select policies that maximize votes at upcoming elections

With regard to voters:

1. Voters prefer stable prices and low unemployment

2. Voters seek economic benefits and reward governments for those benefits

3. Voters are unaware of the trade-off between inflation and unemployment (voters are myopic)

4. Voters evaluate economic policies retrospectively, with decaying value placed on time periods

    further back

5. Voters are not forward looking

These assumptions underlie much of the early and pioneering work in the field, including Nordhaus

(1975), and Alt and Crystal (1983). Considerable attention was placed by Nordhaus on the inflation

unemployment trade-off known as the Phillips curve. An important feature of this early work is that in

---

[2] Based on the discussion of Nordhaus (1975) with respect to the inflation/unemployment trade-off, this
assumption should apply only in the short run and to federal governments.

order for there to be the presence of fluctuating cycles, this trade-off must occur in the short run but not in the long run. Policy-makers concerned with reducing unemployment in the long run, or unconcerned with targeting unemployment, would make policy choices that gradually reduce, or do not alter, unemployment. If long-run objectives were targeted, then economic cycles would not coincide with political timing or fulfill assumptions 1 and 3 with regard to the government. Governments aiming to maximize long-term improvements would pursue strategies that are inconsistent with those aiming to maximize votes at upcoming elections. When considering the short time frame in which federal politicians are directly able to alter the unemployment rate, as well as the unpredictability of the outcomes of their efforts to do so, governments would generally not be able to lower unemployment throughout for the length of an entire term, and even less likely for the entirety of two terms.

Economic models hinging upon voter myopia seem prone to methodological problems, especially in more developed countries. One problem facing models that rely upon theories of voter naivety is that it is not unreasonable to think of voters as forward looking, as has been done in much recent research. The linkages made by voters between positive economic conditions in the present and future economic prospects under the incumbent government are not so evident. Simply put, even if economic times are good at the moment, it is not clear that voters attribute those favourable economic conditions to the incumbent government if the government is not perceived to be competent, and hence voters may not necessarily re-elect them. This possible result of voter perception may be of explanatory value when considering poor empirical findings of political business cycles in exogenously timed electoral systems in the past.

Later work in the field has approached the topic with models that address the signalling of competency to voters under asymmetric information. Governments aiming to sway votes through economic manipulation must show voters that economic conditions are favourable and that the incumbent

government is competent. Competence can be loosely defined as the ability to deliver more public

goods for the same level of taxes Drazen (2008). Under models such as those introduced by Rogoff and

Sibert (1988) and Rogoff (1990), the current competency of governments is known to the government

but not to voters, whereas government competency in prior electoral terms is observable to all.

Assumptions with regard to government remain the same as those of prior models: governments seek

re-election as a priority through the use of economic policy tools that maximize votes in future elections.

Due to the asymmetric nature of information pertaining to current economic performance, however,

governments seek to improve their re-election chances based on criteria of government performance

rather than on macroeconomic outcomes of unemployment or output alone.

A simplified version of Rogoff's model for voter behavior is outlined in Drazen (2008):

$$\Gamma = \sum \left[g_s + v(k_s) \right] + \eta_t \tag{1}$$

where,

   Γ represents the utility function of the representative voter

   g_s is public consumption

   k_s is public investment

   $v(\cdot)$ is increasing and concave

   η_t is a random shock

There is an election at the end of the first period, whereby voters will maximize their utility based on

information they have collected during that period. In this model, the advent of opportunism for an

incumbent to favourably manipulate expenditure arises from the breakdown of the production of public goods. The government is able to produce public goods in time *t* according to:

$$= \Box\Box + \quad _{\Box\Box+1} \tag{2}$$

where,

$\Box\Box_{\Box\Box-1}$ is observable to voters

$\Box\Box$ is observable to voters

$\Box\Box$ is only observable to the government

Public investment must be chosen one period in advance and is therefore not directly observable to voters. This asymmetric knowledge between voters and the governments means that voters are not able to discern if a high value of $\Box\Box$ is the result of prior competent performance and productivity or if the current expenditure will be financed through future revenues or cuts in other programs.

As we can see, the theoretical underpinnings of political business cycles that hinge on the manipulation of fiscal policies, as opposed to macroeconomic variables, allow for voter preferences that are forward looking. Nevertheless, even with forward-looking voters, some degree of opacity is required with regard to their ability to observe the components of public consumption. Informed voters in more developed countries may be able to identify temporary increases in government spending as fiscally reckless, and thus see through the government's signalling. Even uninformed voters can become aware of large deficits in election years. If incumbent governments generate large increases in aggregate expenditures, it is possible that voters will identify this increase in spending as temporary. Due to particular voter observation of deficits, Drazen argues that it is possible that incumbent governments may still manipulate the composition of government spending to cyclically coincide with elections while keeping the overall level of spending and transfers steady.

Political Business Cycles and Endogenous Election Timing

The effect of macroeconomic variables on voter behavior is not a new concept, especially to politicians

and policy-makers. Even if the effects of macroeconomic trends are not necessarily significant in

shaping voter choice, politically motivated policy-makers may still act upon them in an attempt to

improve their chances of re-election. Two categories of questions may be highlighted with respect to

how policy-makers may act on economic trends. The first is whether the timing of elections shows signs

of being shaped by economic trends, referred to as political business cycles. The second is whether there

is reason to believe that policy choices, such as government spending and taxation, are altered by

decision-makers to coincide favorably with the timing of electoral events, referred to electoral budget

cycles. We will address the first set of questions in this section and the second set in the next section.

Without looking at government fiscal policy choices, economic factors can shape political cycles in two

ways. Incumbent governments can endogenously decide the timing of elections in parliamentary systems

to coincide with economic trends, or incumbent governments can make macroeconomic policy choices

that alter economic conditions to coincide with elections. Political business cycles, through the

manipulation of macroeconomic variables, tend to be more consistent with federal governments as

opposed to those of provinces or municipalities, especially those of less developed countries

Kayser(2005). As well, political business cycles are more common in electoral systems with fixed, or

exogenous, election timing. Hence, when considering our data, it would be less likely to find evidence of

macroeconomic manipulation in a provincial government with no monetary control and endogenous

election timing. Kayser also finds a number of relationships between manipulation of economic

variables as part of a political business cycle and opportunistic election timing. Most relevant to this

paper, he finds an inverse relationship between opportunistic election timing, which he calls surfing, and

manipulation of macroeconomic variables Kayser(2005). Given our later findings, Kayser's relationships

may indicate a tempering effect of opportunistic election timing on macroeconomic manipulation.

Early work regarding political business cycles, as done by Nordhaus (1975), hypothesizes that following

elections, opportunistic governments will raise unemployment, in part to combat inflation, and then as

the next elections approach, unemployment will be lowered again. We can investigate this hypothesis

through comparing the annual rate of change in unemployment rates. To confirm Nordhaus' theory we

should see unemployment rates increase in the first half of the electoral period and decrease in the

latter half. T-tests were conducted to see whether the change in unemployment, variable DUR, was

positive or negative in each of the five possible years of an electoral term. The tests was structured so

that H_0: $= 0$ and three alternative hypotheses were that the mean change in unemployment rate

was greater, less than, or equal to zero. The results are presented below:

<u>T-tests of Change in Unemployment by Years into Term</u>

Year	1	2	3	4	5
Predicted Change	Positive	Either	Either	Negative	Negative
Observed Change	Positive*	Positive	Positive	Negative	Negative
P value (T > t)	(0.063)	(0.103)	(0.27)	(0.17)	(0.43)
Degrees of Freedom	74	76	70	53	12

*Significant at 90% level of significance

The predicted change row indicates the sign of the annual rate of change in unemployment rate

predicted by the Nordhaus hypothesis for the presence of political business cycles. The observed

change row indicates the sign of the most significant alternative hypothesis and the p-value of the test is

presented below. As we can see, of all the tests the only significant alternative hypothesis at the 90%

level was   : $H_1 > 0$ where Pr(T > t) = 0.06, although   : $H_2 > 0$ was close with Pr(T > t) =

0.103. In most cases we do not reject the null hypothesis that the mean change in annual

unemployment rate was zero.

These results do not present strong findings of a political business cycle by Nordhaus' test. As well, even

if unemployment decreased in years following elections, there may be other related factors influencing

the change other than government intent. Opportunistic election timing itself may resulted in

successfully timed elections by incumbents before future rises in the unemployment rate took hold.

Furthermore, the methodology of Nordhaus is more consistent with the federal political sphere, as

combating inflation is not under the purview of provincial policy-makers since they do not have monetary

policy tools at their disposal. If we conduct a two sample t-test of whether the mean annual change in

unemployment differs between election and non-election years using the variables DUR and ELECDUM,

we do not reject the null hypothesis that the mean of election and non-election years are the same at any

level of significance.

We now move on to electoral timing. In some electoral systems, the timing of elections is fixed to occur

on certain dates. This is especially common at the national level in two-party governmental systems. In

parliamentary democracies, however, the timing of elections is frequently controlled by the incumbent

government. In Canada, at both the provincial and federal levels, although limited to maximum terms of

five years, governments have the ability to call early elections through one of two ways. In the case of the

governing party controlling a minority of the seats in the legislature, if any vote of confidence should fail,

an election will be called early. In the case of a majority government, an election may still be called early

by the incumbent party petitioning the lieutenant-governor (as the representative to the Crown) to

dissolve the legislative assembly and call an election. This third option is a feature of Canada's

constitutional monarchical governmental structure, but since the request to dissolve parliament has never been rejected, the ability of the incumbent party to call early elections is the effective result. The decision to call elections is generally made endogenously within government, and thus the potential exists for the incumbent party to attempt to increase its electoral advantage through the opportunistic timing of the election.

As a result of the potential for the incumbent political party to make policy decisions regarding the timing of calling an election, there may be a correlation between the timing of elections and the economic trends at that time the decision is made. The decision would reflect the political party's perceptions of the benefit of different economic conditions in relation to electoral results. It can be assumed that, by and large, positive economic performance is viewed as a favourable factor in the re-election chances of the incumbent. It would seem unlikely that policy-makers would decide to time an election during a period of economic stagnation, and indeed positive economic indicators have been overwhelmingly observed to be historically correlated, at least mildly, with incumbency advantage. Thus, a political business cycle could result from the politicians reacting to positive economic variables in their choice of election time, either intentionally or otherwise.

In keeping with the methodology employed by Reid (1996), a test of the endogenous election hypothesis can be formed by creating a model to estimate the probability of an election being called in any time period t. The model can be described by the following equation:

$$
\beta = \beta_0 + \beta_1 \cdot \quad + \beta_2 \cdot (\quad)^2 + \beta_3 \cdot \quad + _4 \cdot \quad + \beta_5 \cdot
$$

$$
+ \beta_6 \cdot \quad + \beta_7 \cdot \quad + \beta_8 \cdot{}_{-1} + \beta_9 \cdot \quad + \beta_{10} \cdot
$$

$$
{}_{-1} + \beta_{11} \cdot
$$

$$
+ \beta_{12}\,{}_{-1} + \quad \tag{3}
$$

where each of the variables is described in Table 1 and   is a random disturbance term.

Since, with respect to the decision by policy-makers to call an election, positive economic conditions would be favorable to electoral success for the incumbent, then the probability of an election being called should rise when economic conditions are good. Voters prefer high and rising GDP, and do not prefer high unemployment or inflation. From this, we should expect the coefficients attached to output growth (β_7 and β_8) to be positive and the coefficients attached to unemployment and inflation to be negative (β_9, β_{10}, β_{11}, and β_{12}).

From equation (3), a probit estimation was used using the election dummy variable (ELECDUM) as the dependent variable in the eleventh version of STATA. The results can be seen in Table 2 below.

Table 2. Probit estimates of election timing (z-values in parentheses)

Independent Variables	Estimated Coefficients
ELAPSE	0.660 (-1.01)
$(ELAPSE)^2$	0.347 (2.84)**
MINORITY	1.049 (1.85)*
LEFT	-0.862 (2.40)**
POPVOTE	0.006 (0.17)
PERSEAT	-0.015 (0.91)
Δ	-0.067 (1.26)
Δ_{-1}	0.155 (2.43)**
UR	0.032 (0.18)

UR$_{t-1}$ -0.037 (0.2)

           0.106 (1.58)

π_{t-1} -0.118 (1.72)*

# of observations = 270

McFadden ρ^2 = 0.527

Percent correct predictions = 89.26%

Log-likelihood ratio test statistic = 161.98 $\sim \chi^2$ (12)

---

*Significantly different from zero at the 90% level of confidence.

**Significantly different from zero at the 95% level of confidence.

Looking at the model overall, we find the overall regression to be significant at all levels of confidence as indicated by the log-likelihood ratio test statistic of 161.98. From Table 2 we can see there are a number of significant variables. The positive coefficient on the variable (ELAPSE)^2 indicates that the probability of an election being called rises non-linearly as the end of the five-year term approaches, with greater weight being placed on later years. The positive coefficient on the MINORITY variable indicates that the presence of a minority government increases the probability of an early election, which is to be expected since minority governments face the additional possibility of early elections due to non- confidence motions in the legislature.

When looking at the mandate and type of government, we do not find significant results for the percentage of seats or popular vote held by the government, but we do see significant results based on the type of party. The variable LEFT is significant at the 95% level of confidence and has a negative

coefficient, indicating a reduced probability of an early election if the incumbent party is the NDP or the PQ. This could indicate that left-wing parties tended to wait out their terms in office, possibly out of poor re-election prospects.

We can see from the significance of two economic variables that there is some evidence to suggest opportunistic election timing. The variable Δq_{-1} is significant at the 95% level of confidence, indicating that if last year saw a higher growth in yearly per capita output, then elections tended to be called more often in the following year. The coefficient β_3 =0.155 is consistent with the prior expectations of our endogenous election hypothesis that it would be positive. Likewise, we find the variable representing last year's provincial inflation to be significant at the 90% level of confidence and consistent with the theory as well. The coefficient γ_{12} = -0.118 has a negative sign, indicating that incumbents were less likely to call an election in years following higher inflation.

Political Budget Cycles

Our prior analysis has examined the role of broad macroeconomic variables, most prominently output, inflation, and unemployment, to investigate possible relationships between the timing of electoral decisions and the possibility of economic manipulation to favourably alter those variables at specific times. As noted by Beck (1988), however, the focus may be shifted to the role of incumbency-orientated models that use economic policy instruments, namely government expenditures and revenue policies, as the dependent variable, rather than economic outcomes themselves. This is a conceptually natural area of focus, since fiscal decisions are more under the control of political policy-makers, being more directly controlled through policy decisions. Whereas policies aimed at targeting inflation or reducing unemployment may take several months or even years to show effects large enough to be noticeable to voters, government works projects or tax lowering announcements may be observed more readily.

It is of interest to note, as highlighted by Rogoff (1988) and Tufte (1980, p 149), that political budget cycles need not be viewed as a bad thing. Rogoff argues that under his model of competency signalling, pre-election budget manipulations can act as a socially efficient mechanism for diffusing information regarding the government's competence. Incumbent governments that are more competent have a greater incentive to stay in office and, as a corollary result, have a stronger motivation to manipulate economic conditions in order to signal that competence. Tufte also argues that the increased expenditures leading up to an election may be socially beneficial as governments may distribute wealth more equitably than otherwise.

A continuing factor in the analysis of policy decisions made at sub-national levels of government is whether those decisions are affected by higher levels of government. If fiscal decisions at the provincial level are limited by federal concerns, research regarding electoral effects is altered. Constitutional

restrictions may include balanced-budget legislation, or tax or expenditure limits. If provincial governments are impeded or deterred from altering fiscal decisions due to federal transfers, then political budget cycles may follow sporadic patterns punctuated by federal spending trends.

On the other hand, there may also be reason to suggest more accentuated fiscal manipulation at sub-national levels. Provincial policy-makers do not have access to monetary policy tools and thus may rely more on fiscal policy. Kneebone (2001) suggests that Canadian provinces are in practise not hampered by federal concerns, as the constitutional limits placed on fiscal policy are not very binding and the majority of government spending and taxation take place at the provincial level. Furthermore, fiscal policies at the provincial level may be unaffected, or less affected, by exchange rate factors than federal government fiscal policies. This provides one advantage, as pointed out by Kneebone, that looking at cross-sectional data of provinces provides more consistency between political and social institutions then among multi-country studies at the federal level. However unique in their own right, provinces have more homogeneity in voter preference and political and constitutional systems than comparisons at the national level. All provinces share the same monetary regime and largely share common exchange rate effects.

To test whether provincial policy decisions of spending and taxation are related to the timing of elections, six measures of policy instruments were collected and real, per-capita, annualized rates of changed were calculated. Expenditures were divided into four components: government expenditures on goods and services (GGS), transfers to persons excluding interest payments on public debt (TRP), transfers to business (TRB), and gross fixed capital formation (GI). The four categories were aggregated to create a measure of the change in real per-capita total discretionary expenditures by provincial governments (EXP). A measure of real per-capita non-debt revenue was also collected that excluded

transfers from the federal government (REV). Definitions for the additional variables used in this section

are listed in Table 1.

The effects of electoral timing on these variables were estimated using six regressions of the following

form:

$$
Y_{it} = \beta_0 + \beta_1 \cdot Y_{it,t-1} + \beta_2 \cdot Y_{it,t-2} + \beta_3 \cdot Y_{it} + \beta_4 \cdot \Delta\, Y_{it} +
$$

$$
\beta_5 \cdot Y_{it} + \beta_6
$$

$$
\cdot\; Y_{it} + \beta_7 \cdot \quad Y_{it} + \beta_8 \cdot \quad Y_{it} + \beta_9 \cdot
$$

$$
Y_{it} + \beta_{10}
$$

$$
\cdot\; Y_{it} + \varepsilon_{it} \tag{4}
$$

where,

Y_{it} represents one of the six fiscal policy variables

$Y_{it,t-1}$, $Y_{it,t-2}$ the policy variable under consideration lagged by one and two periods

From Equation (4), six panel regression estimations were used for the six fiscal policy variables using the

eleventh version on Stata. The results can be seen in Table 4.

Equation (4) was estimated as a panel regression using the ten provinces as panel groups. Each of the ten panels had 26 observations for a total of 260 observations. It would be reasonable to assume that

policy trends would differ among provinces, and the model therefore accounts for differences among

provinces as well as through time. As a result, the errors are contemporaneously correlated among the

cross-sections. As opposed to the methodology in Reid (1996), instead of including nine provincial

dummy variables, one categorical provincial variable was used and the model's fixed panel effects were

estimated. This resulted in different constant terms in the estimations but consistent estimators for all

relevant variables. This was done both for expediency and to obtain a measure of the serial correlation between the two categories of error terms. The coefficients of the estimators and their standard errors remained unchanged.

From Table 4 we find very significant results indicating that expenditures follow a strong counter-cyclical pattern. As the growth rate in output increases, expenditures decrease, primarily through reductions in expenditures on goods and services and transfers to persons. At the same time, revenues exhibit a strong cyclical component, significantly increasing as the growth rate in output increases. A number of observations can be drawn from these findings. First, both tax rates and discretionary government spending at the provincial level as a fraction of GDP remain relatively constant over the business cycle, often smoothed through automatic stabilizers: Alesina, Campante, and Tabellini (2007). Provincial governments generate cyclical deficits and surpluses as they move through the business cycle. Alesina et al. suggest that this counter-cyclical feature can be an indicator of two things: it could be an indicator of transparent and non-corrupt government practises in developed democracies; and/or it could also be an indicator of comparatively easy and affordable government borrowing in troughs in the business cycle. At the same time, it is possible that counter-cyclical policies can increase government indebtedness: Gordon and Leeper (2005). As well, the results of counter-cyclicality differ from the findings of Reid (1996), possibly indicating a policy shift between over time.

Interestingly, there are little effects to suggest effects on fiscal policy choice from the political mandate of the incumbent party. The effect of minority governments, political stance, and change of government all do not present evidence of influencing fiscal policy.

Table 4. Panel Estimates of Policy equations (t values in parentheses)

Independent Variables			Dependent Variables			
	Goods and Services	Transfers to Persons	Transfers to Businesses	Fixed Capital	Total Expenditures	Revenue
Dependent	-0.071	-0.062	0.028	-0.049	-0.096	-0.311**
(Lag 1)	(1.15)	(1.01)	(0.45)	(0.76)	(1.55)	(5.04)
Dependent	-0.094	-0.140**	-0.011	-0.201**	-0.025	0.116*
(Lag 2)	(1.5)	(2.30)	(0.18)	(3.16)	(0.42)	(1.81)
◆◆	-0.612**	-0.693**	-0.531	-0.163	-0.578**	1.856**
	(7.42)	(3.99)	(0.70)	(0.50)	(6.78)	(4.56)
Δ	-0.021	-0.060	-0.087	-0.121	-0.031	-0.235
	(0.65)	(0.86)	(0.29)	(0.92)	(0.91)	(1.51)
PERSEAT	-0.065	-0.057	-0.322	-0.307	-0.075	-0.323
	(1.38)	(0.57)	(0.73)	(1.60)	(1.52)	(1.45)
POPVOTE	0.135	-0.071	0.852	0.779*	0.115	1.013*
	(1.23)	(0.30)	(0.82)	(1.73)	(1.00)	(1.91)
MINORITY	0.899	-0.061	6.691	-8.827	0.197	0.900

	(0.55)	(0.02)	(0.44)	(1.34)	(0.12)	(0.12)
CHANGE	-0.703	0.923	-7.384	-3.465	-0.822	4.247
	(1.02)	(0.62)	(1.15)	(1.23)	(1.14)	(1.31)
LEFT	-0.471	-1.918	-0.241	-0.524	-0.826	1.392
	(0.49)	(0.93)	(0.03)	(0.13)	(0.82)	(0.31)
ELECDUM	1.109	0.807	18.149**	1.926	1.889**	-2.142
	(1.58)	(0.54)	(2.77)	(0.67)	(2.57)	(0.65)

*Significantly different from zero at the 90% level of confidence

**Significantly different from zero at the 95% level of confidence

Some evidence to support the presence of automatic stabilizers in fiscal policy can be found from the negative coefficients found in the lagged regressor variables, especially in year-to-year revenues. Transfers to persons and fixed capital formation tend to exhibit a balancing component, where higher spending in prior periods of two years back are counter-weighted by lower spending in current periods. The same also applies to revenues, where the current period's revenues empirically compensate to adjust for changes in last year's revenues. That said, there is some slight drift in revenues, where higher revenues of two years prior modestly increase current revenues.

Both real per capita transfers to businesses and discretionary provincial government expenditures are affected, in a statistically significant way, by the timing of elections. These findings are consistent with the presence of an electoral budget cycle. This indicates that not merely the composition, but the aggregate spending increases to coincide with elections.

One potential aspect of the prior analysis that may alter the preceding results is the use of the electoral dummy variable (ELECDUM) for the measurement of election timing. As pointed out in Reid (1996), the on-off nature of a dummy variable may not address the effect of electoral timing on fiscal policy accurately enough. The potential chance of an election, and the corresponding effect on fiscal policy, would be continuous and rising as a government's term approached its constitutional five-year limit. This chance of an election is better described by hazard function or survivorship models. For a look at hazard estimations at the Canadian federal level, see Ferris and Voia (2008). As a proxy for a hazard model, predicted electoral probabilities were calculated from the fitted probit regression of equation (2). These probabilities were stored as the new variable ELECPROB, and the six panel regressions of equation (3) were re-estimated with the new variable ELECPROB replacing ELECDUM. The regressions were estimated in a consistent manner with the prior ones, and the results are reported in Table 5.

The results of the estimations of Table 5 are consistent with the prior results, adding robustness to our prior findings. Expenditures remain counter-cyclical and revenues remain cyclical with respect to output growth. The stabilizing mechanisms of revenue and fixed capital formation remain consistent, but transfers to persons are no longer influenced by lagged transfers. Most importantly to the electoral budget hypothesis, total expenditures remain connected to electoral timing, significant at the 95% level, through increases to transfers to business in electoral periods. As the probability of an election becomes more imminent, real per capita expenditures and real per capita transfers to business increase at a greater rate.

These findings appear to be essentially consistent with the asymmetric competence signalling framework outlined in Rogoff (1990). This analysis is based on the assumption that government consumption is more easily observed by voters than investment and thus acts as a better signalling tool. Rogoff's analysis predicts that pre-election signalling should lead to an increase in government

consumption and a decrease in public investment. Although we do not observe a decrease in

government investment, represented by fixed capital formation and the variable GI, we do see an

increase in government spending. This increase came in the form of transfers to business as opposed to

government purchases of goods and services, but it can still be viewed as government consumption. As

pointed out in the footnotes of Reid (1996), much of what may be classified as current purchases of

goods and services, such as healthcare and education, may in fact be classified as investment.

Table 5. Panel Estimates of Policy equations (t values in parentheses)

Independent Variables	Dependent Variables					
	Goods and Services	Transfers to Persons	Transfers to Businesses	Fixed Capital	Total Expenditures	Revenue
Dependent	-0.069	-0.061	0.035	-0.051	-0.094	-0.308**
(Lag 1)	(1.12)	(1.03)	(0.55)	(0.80)	(1.53)	(5.00)
Dependent	-0.091	-0.139	-0.007	-0.198**	-0.015	0.121*
(Lag 2)	(1.46)	(2.30)	(0.12)	(3.12)	(0.25)	(1.89)
$\diamond\diamond$	-0.612**	-0.689**	-0.512	-0.159	0.575**	1.860**
	(7.41)	(3.98)	(0.68)	(0.49)	(6.77)	(4.58)
Δ	-0.021	-0.054	-0.060	-0.116	-0.028	-0.242

	(0.63)	(0.77)	(0.20)	(0.88)	(0.83)	(1.56)
PERSEAT	-0.063	-0.053	-0.283	-0.303	-0.070	-0.328
	(1.34)	(0.53)	(0.64)	(1.57)	(1.43)	(1.47)
POPVOTE	0.131	-0.078	0.773	0.771*	0.106	1.015*
	(1.19)	(0.33)	(0.75)	(1.72)	(0.92)	(1.92)
MINORITY	0.887	-0.452	5.404	-9.092	-0.008	1.453
	(0.54)	(0.13)	(0.36)	(1.38)	(0.00)	(0.19)
CHANGE	-0.727	0.948	-7.648	-3.481	-0.843	4.238
	(1.05)	(0.64)	(1.20)	(1.24)	(1.17)	(1.31)
LEFT	-0.432	-1.826	0.560	-0.409	-0.739	1.221
	(0.45)	(0.89)	(0.06)	(0.10)	(0.74)	(0.27)
ELECPROB	1.208	2.675	24.97**	3.298	2.874**	-4.990
	(1.28)	(1.33)	(2.83)	(0.86)	(2.92)	(1.13)

*Significantly different from zero at the 90% level of confidence

**Significantly different from zero at the 95% level of confidence

Concluding Remarks

Through the use of provincial data, it was possible to generate a sizeable dataset, and a number of tests and observations were conducted. The results were mostly promising in terms of providing reasonable evidence to suggest the application of the timing of economic variables based on political timing through the rubric of opportunistic model.

The results of the popularity and re-election functions were mixed, and partly contradictory. It may be possible that inflation and last year's unemployment are positively correlated to electoral success as found, but the results do not seem likely in this author's opinion and may instead represent the limitations of the dataset or some methodological error or both. Some evidence suggested that governments that spent more, that were the same as the federal party, or that were Liberal were more likely to be re-elected. Present year unemployment was robustly negatively correlated with electoral success. Robust findings also suggested that incumbents seeking re-election did so more advantageously in the third and fourth years of their government term.

Tests for opportunistic election timing found statistically significant and theoretically consistent results indicating that Canadian provincial elections were timed to follow years of higher output growth and lower inflation.

In examining the effects of fiscal policy and its timing, it was found that Canadian provinces were counter-cyclical and that transfers to businesses and total expenditures increased in election years as well as when the probability of an election was higher.

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