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Elections, Economic Outcomes and Policy in Canada: 1870 - 2015

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Abstract

In this paper we examine the relationship between economic and electoral outcomes in Canada since Confederation (1867) and the role that economic policy has played in influencing this relationship. The results are consistent with voter concern for the overall performance of the economy in the incumbent's governing term—the average growth rate of per capita GDP and average unemployment rate—while rejecting the presence of a political business/budget cycle response in the period leading into an upcoming election. Evidence for the effect of performance on the stability of the political party system (as measured by party vote volatility) is even stronger. The data also are consistent with the use of policy for countercyclical stability (primarily through spending and deficits), fiscal response to voter turnout, the growth of both spending and deficits under larger governing majorities and compliant monetary response to fiscal deficits.

Key words: economic and electoral outcomes, political business cycle, political influences on policy, policy endogeneity, seemingly unrelated regressions
JEL Codes: Z18, H30, E60

In this paper we examine the relationships arising between economic and electoral outcomes in Canada and the role that economic policy has played in influencing these relationships. While much has been written on this topic generally, recent concern with their interconnections has focused on the role of economic, political and policy volatility and hence have opened an opportunity to re-examine the multiple forms of their interdependence in Canada.[1] Application to Canada is particularly meaningful because of the long history of stability in its underlying political and legal institutions (since Confederation in 1867). This has allowed critical focus on such issues as the incumbent's likelihood of re-election, the length of the governing term and the stability of the political party structure without having to account for the viability of the economic and political systems as a whole. However, an important complication arises in Westminster democracies such as Canada's from the conventional ability of the governing party (through the Prime Minister) to control the timing of upcoming elections.[2] This flexibility in election timing has made problematic the strategic role of economic policy: pitting the hypothesis that election dates are chosen (surfed) by the incumbent governing party in response to economic circumstance (Smith, 2003; Kayser, 2005; Ferris and Voia, 2009) against the hypothesis that government policy will be used by the incumbent political party to induce a more favourable electoral outcome (Rogoff and Silbert, 1988; Ferris and Voia, 2011). While the two hypotheses do not stand in direct opposition, the adoption of either strategy undermines the electoral effectiveness of the other. To isolate policy opportunism in the set of choices defining economic policy, election opportunism must be distinguished from the more general political necessity of providing 'good government'. This we interpret as using policy to stabilize

[1] Recent papers linking economic outcomes, policy and political volatility include Brunetti, 1997, 1998; Ali, 2001; Henisz, 2004; Mobarak, 2005; Nooruddin and Chhibber, 2008; Jong-A-Pin, 2009; Klomp and de Haan, 2009; Edwards and Thames, 2010; Bejar and Mukherjee, 2011; Fatas and Mihov, 2013; Aisen and Veiga, 2013; Ashworth, et al., 2014; and Bizarro, et.al. 2018. For Canadian specific studies, see Nadeau and Blais, 1993; Reid, 1998; Serletis and Afxentiou, 1998; Johnston, 1999; Nadeau, Blais, Nevitte, and Gidengil, 2000; Kneebone and MacKenzie, 2001; Ferris and Voia, 2011 and Voia and Ferris (2013).

[2] Note that many Westminster parliamentary democracies, including Canada's, have recently adopted "fixed" election terms. These include South Africa (1996), New Zealand (1993), Scotland (1998), Ireland (1992) and the United Kingdom (2011). In Canada's case, the 2015 election was the first federal election held under the fixed timing rule set legislatively by the Conservative Party in 2008. The conflict posed by the presence of both a confidence requirement and a fixed four-year governing term makes the reliability of fixed election terms problematic (for majority governments). Unlike United Kingdom legislation, for example, there is in Canada no minimum vote requirement established before an election can be called. On the adoption of fixed election terms in Canada, see Ferris and Olmstead (2017).

the economy from fluctuations in the business cycle, to provide for the allocative and redistributive demands of an ever-changing voting public and to respond to the partisan nature of the party in power and significant particular circumstances (such as world wars and periods of minority government).

Our analysis begins by asking whether for Canada there is evidence that election outcomes for the incumbent governing party—the likelihood that the incumbent will win the upcoming election and/or raise its vote share—are related in predictable ways to better economic performance during its governing tenure? The economic outcomes we consider include the levels and variability of the growth rates of real per capita income, unemployment and the rate of inflation.[3] In short, is there evidence of a political business cycle? Broadening the focus beyond the electoral prospects of just the governing party, we also ask whether the structure of Canada's party system responds to economic performance. Here the stability of party structure is measured by the volatility of vote shares among Canada's political parties.

An initial look at the data finds evidence of a pro-cyclical election cycle in economic growth rates and a countercyclical cycle in unemployment rates and an even stronger response to both in vote volatility. However, while these findings imply that economic circumstances do matter, the results do not preclude the possibility that these economic circumstances were produced by government policy (there is an underlying political budget cycle). Hence to assess whether the correlations found between election and economic outcomes could have arisen from the policies adopted by the incumbent governments, we proceed in two stages. First, we examine whether there is evidence of a direct relationship arising between election outcomes and government policy--the underlying levels or variability of the fiscal and monetary policies adopted during the incumbent government's tenure (controlling for other non-policy characteristics of the political environment). In the case of direct effects, the analysis is framed in relation to 39 of the 42 federal elections that have followed the adoption of Canada's Westminster parliamentary structure in 1867.[4]

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[3] Through our paper the variability of a variable is measured as a moving coefficient of variation (cv) —a 4-year lagged standard error divided by its 4-year mean. In relation to elections the cv is an average of the yearly cv's over the previous governing term.

[4] Because we have consistent annual economic data only from 1870 onwards, the use of growth rates and the use of 4 lags in the construction of moving averages and coefficients of variation results in our election coverage

The inability to find a direct link to election outcomes from policy consistent with opportunism leads us to search for evidence of an indirect link through income changes produced by public policy for electoral purposes. Here we use the longer annual time series on policy choices to ask what dimensions of government policy, if any, have been responsive to the timing of an election while controlling for other characteristics of the economic and political environment believed to have an influence on government policy. That is, policy changes directed strategically at elections must be separated in the data from changes directed by the evolving demands of a voting public and good governance concerns that include the use of policy to counter the business cycle. Recognition of Wagner's Law and counter-cyclical policy use raises a significant identification problem since policies and economic outcomes will be partially co-determined. To control for endogeneity, we first use two stage least squares to instrument income within each policy equation and then adopt seemingly unrelated methods to incorporate potential interactions arising among policy instruments while controlling for endogeneity. Controlling for competing uses of policy and their interaction may then serve to isolate time periods in which policies respond in ways consistent with producing the income and unemployment rate movements that have produced election cycles.

The paper concludes by summarizing our findings. In arguing that policy use in Canada has been directed primarily at providing good governance, we add the cautionary note that our results are specific to the operation of pluralistic Westminster democracy in Canada before the adoption of fixed four-year governing terms (implemented in the 42nd election in 2015). Sufficient evidence exists on other Westminster democracies (India, Australia, New Zealand and the United Kingdom) to suggest that the commonality of some aspects of institutional form need not imply the commonality of operation in practice.

1. Incumbent electoral outcomes, party structure stability and economic performance

beginning in the third election in 1875. This leaves us with data on 39 elections. When using unemployment, the number falls to 29 and with its coefficient of variation it falls to 27. Turning to policy, the 1932 incorporation of the Bank of Canada restricts our inclusion of monetary policy to the 25 elections following 1935. The recent October 21 2019 election is not covered.

Our analysis begins by examining the effects produced on two election outcome margins by economic performance: the extensive margin describing the contribution of economic conditions to the likelihood that the incumbent governing party will win the upcoming election and two forms of the intensive margin--one describing the contribution of the economy's economic performance to the vote share received by the incumbent party and the second examining their effects on the electoral stability of the political party system (as measured by party vote volatility). In general terms, the extensive margin can be modelled as:

$$Incumbent\ winning = Prob(incumbent\ winner = 1|\ X) + error\ (logistic) \qquad (1)$$

where the set of conditioning variables X includes three measures of economic performance (the growth rate of real GDP per capita, the rate of inflation and the unemployment rate) and where each performance measure appears both as a level and as its volatility. The performance measures appear in levels either as a lagged outcome (typically the value in the year prior to an election) or as an average arising over an election window (either the four years leading into each election or the time interval that the incumbent party governed). The volatility of each level is measured by its coefficient of variation, the standard deviation normalized by its mean.[5]

While good versus bad times may signal whether the incumbent will win or lose an election, changes in the incumbent's vote share and/or changes in vote volatility may offer a more subtle view of the effects of economic performance on the political process. That is, the approval or disapproval of voters may be better captured by the change in the vote share going to the incumbent party rather than simply by whether the incumbent party wins or loses. Similarly, voters' reaction to economic circumstance may be more fully captured by the degree of vote shifting that arises among all active political parties. In a country like Canada where multiple parties appeal to different voting groups and offer competing policy programs, vote

[5] In constructing the dimensionality of the economic and policy variables to associate with election outcomes we experimented with different window lengths (from 1 to 4 years) and with the positioning of those time periods relative to the election. The text presents the most informative of these possibilities for per capita income, a four-year average with standard errors based on the current and three lagged values of the outcome variable. In terms of an expectation hypothesis, the measure implies that voters incorporate some degree of foresight along with past information in forming their expectation of future performance. For most other averages and coefficients of variation, the average was based on the time interval that the incumbent party was in office and the coefficient based on a four-year moving average.

switching among political parties may be a more meaningful indicator of voter unrest and political instability.[6] To capture these possibilities we model the two intensive margins as:

$$Incumbent\ vote\ share \mid Party\ vote\ volatility = f(X) + error \qquad (2)$$

where the set X of outcome measures is defined as in (1).

Because the growth rate of per capita GDP is expected to register strongly in our results, we have divided each table below into two parts to test whether the pre-election growth rate or the average level of income/output term performance matters more to voters. To do so the first four columns in each table present the results using the per capita growth rate arising in the year immediately prior to the upcoming election and the final four columns use instead the average per capita growth rate arising over the four years leading into the upcoming election.[7] The tables are also subdivided by the fact that the unemployment rate in Canada is available only from 1919 onwards. For this reason, we use the odd numbered columns in each table to represent the results for the longer time period covering the 3th through the 42nd elections while the even numbered columns present the results when the unemployment rate and its coefficient added covering the truncated period from the 15th to the 42nd election.[8] Data sources for the variables used in the following empirical work are included in a data appendix at the end of the paper.

In Table 1 then we examine the electoral prospects facing the incumbent governing party. The likelihood of winning is modelled as in equation (1) and the model explaining incumbent vote shares is described in equation (2). Scanning Table 1, two features immediately stand out. First, the use of the average term per capita GDP growth rate (in the second half of the table) dominates in significance the use of the per capita GDP growth in the period leading into the upcoming election (in the first half of the table). While only one of the four coefficients of the prior year per capita growth rate is significant (and this using only a 10 percent confidence interval), fully three of the four average growth rate coefficients are significant at either the 5 or

[6] In Canada a rising level of support for regional parties and/or national parties with different levels of regional representation is often a strong indicator of political unrest over the existing structure of federalism.
[7] In dating the incidence of pre-election per capita growth, we also experimented with using the actual year of the election and a year split in July. The year prior to the election was the most informative of the three alternatives.
[8] The coefficient of variation in the unemployment rate is included for completeness but is never found to be significant. Excluding it increases the significance of both the average per capita growth rate, the average unemployment rate, and particularly for the inflation volatility measure. Results available on request.

1 percent level. This difference in significance between the two growth measures is repeated, as we will see, for vote volatility in Table 2. The second observation is that the set of economic outcome variables explain at most between 20 and 40 percent of the variation in incumbent electoral outcomes. Hence to the extent that the correlations capture causation, aggregate economic performance can explain only part of election outcomes.[9] With this qualification in mind, however, the data are consistent with at least two of the economic performance variables having a significant effect on the incumbent's election results.

-- insert Table 1 about here --

As noted earlier, a higher average per capita growth rate over the four-year interval leading into the current election significantly signals both a higher likelihood of the incumbent party winning the upcoming election and receiving a higher share of the vote.[10] For Canada, then, the data is consistent with the hypothesis that higher income growth rates matter to voters, more so than simply the growth rate arising in the year leading into the election. In this sense the data rejects the hypothesis of a political business cycle relative to the hypothesis that voters care more for the overall performance under the governing political party and are neither fooled by nor responsive to the signal of a rising per capita growth rate in the period immediately before the upcoming election.[11]

The second performance measure that appears to matter for electoral success is the average unemployment rate arising during the incumbent party's tenure. In this case, however, although all prior unemployment coefficients exhibit the predicted negative effect on electoral success, significance arises only in the first set of regression results when used in combination with the prior income growth rate.[12] Reading the unemployment effect together with the growth

[9] It is important to note that while we focus only on aggregate measures of performance and policy, policy can also play a significant distributional role in impacting election results. See for example, Blanchard, Brown and Chor (2019) who examine the role of Trump tariffs with respect to 2018 U.S. election outcomes.

[10] The average per capita growth coefficient is significantly different from zero using a 14 percent confidence interval when the unemployment rate is included.

[11] Note that while growth rates are often used to explain the likelihood of incumbent electoral success in the political literature (Fair, 1978; Hibbs, 2012), it not a factor found generally in tests for the political business cycle in developed democracies (see Brender and Drazen, 2008). Here both results can be found depending upon the length and incidence of the time interval used in the growth rate.

[12] It may be worth noting that when the coefficient of variation of the unemployment rate is dropped from the regressions, the prior unemployment rate often becomes significant.

rate effect across the eight columns, it appears that incumbent electoral success is associated with either a higher per capita growth rate or a lower unemployment rate but not both at the same time.[13]

For the incumbent party, then, the average per capita growth rate realized over the governing term and/or the prior term unemployment rate are the only ones of the six dimensions of economic performance that are consistent in affecting incumbent political party success. Aside from these, columns (6) and (7) present the only other instances of statistical significance. In both of these cases the volatility of the income growth rate is found to be positively related to the incumbent's winning vote share, a directional effect that is inconsistent with the hypothesis that greater volatility would be perceived as an electoral bad. Looking even more generally at the electoral effects associated with economic volatility, the data offer very little support for the hypothesis that the volatilities of output growth, inflation or unemployment matter much for the electoral success of the incumbent governing party. Only three of the twelve coefficients of variations are significant and these become significant only at the 10 percent level and with coefficient signs inconsistent with the hypothesis that lower volatility will improve the electoral prospects of the incumbent party.

In Table 2 we use the linearized form of equation (2) to test for the effects of economic outcome on electoral party stability as measured by two vote volatilities (see Przeworski and Sprague (1971), Pedersen (1979)): a consistency-based measure of candidacy vote volatility and a party-based volatility measure developed at the national level.[14] The former registers the average amount of vote switching among candidates at the constituency level while the latter measures vote switching among parties at the national level. Given that better economic outcomes promote greater political stability, per capita GDP growth is expected to be inversely related to vote volatility while inflation and unemployment rates are expected to be positively related to vote shifting across parties. Because ex post variability implies ex ante uncertainty, all forms of performance variability are expected to increase voter unhappiness with the political status quo serving to promote greater vote shifting among competing parties. The results in Table

[13] The average per capita growth rate and unemployment rates over the shorter 1921 to 2012 time period are inversely correlated (ρ =-.317).

[14] For the special circumstances used to construct these indices for Canada, see Ferris, Winer and Grofman (2016).

2 then offer a different and perhaps more subtle view of the effects of economic performance on the stability of the political process.

-- insert Table 2 about here –

When Tables 1 and 2 are compared it becomes apparent that the link between economic and electoral outcomes is much stronger for vote switching than for the vote swing to or from the incumbent party.[15] This suggests that the economic performance of the economy has a much deeper effect on forms of political stability than simply indicating the future electoral prospects of the incumbent party. Inspection of Table 2 also reveals that the average level of per capita growth (in columns (5) through (8)) is again more informative than the annual growth rate in the year leading into the election in explaining the evolution of vote volatility over time. This reinforces the Table 1 finding that the incumbent party's electoral prospects are more responsive to the average performance of the economy over the previous governing period than the performance arising in the year prior to the upcoming election. Together these imply that overall performance matters much more than last minute results.

Focusing then on the 'average' results of columns (5) through (8), all three performance criteria (growth, inflation and unemployment) can be seen to impact party structure in the expected way. The average growth rate is negatively related to vote volatility and significantly so in two of the four cases. This is consistent with rising incomes validating voters' choices, not only with the incumbent party (as in Table 1) but with their overall set of political choices. Interestingly, greater volatility in the per capita growth rate does not appear to prompt a reassessment by voters of incumbent party loyalty, reinforcing the effect produced by its level. With respect to the other economic outcomes, better economic performances by way of lower unemployment rates and lower inflation rate volatility are consistently found to be associated with greater stability in political party structure and often significantly so (with 8 of 12 coefficient estimates significantly different from zero). Of the two remaining performance measures only unemployment variability is found to be consistently insignificant while the average inflation rate

[15] Dash and Ferris (2018) find similar effects with respect to Indian States.

alternates in sign and has only one coefficient estimate consistent with higher inflation rates increasing vote switching among new and existing political parties.[16]

While the variability measures of economic performance were found in Table 1 to have had no effect on the electoral prospects of the incumbent political party, the variability and hence unpredictability of economic outcomes does matter significantly for the stability of political party structure. The coefficients of variation of both per capita growth and inflation are significantly related to both forms of vote volatility but affect vote switching in opposing ways. Particularly interesting is the result found for inflation where the data is consistent with the hypothesis that voters recognize the long-held monetarist position that the economic damage arising from inflation arises not from its level but from the coordination issues created by its variability. This is reflected in the differing significance of the two inflation coefficients. The coefficient of variation of inflation indicates a significant positive relationship with vote volatility while the level of the inflation rate shows no relationship with volatility across types or time periods. Greater variation in the growth rate, on the other hand works in the opposite direction and provides the only result that contradicts prior expectation.

The results in Tables 1 and 2 are then consistent with the hypothesis that Canadian federal election results do respond to overall economic circumstances while tending to reject the presence of election opportunism as expected by political business cycle theory. However, because economic outcomes are not exogenous, it could be the case that these average performance outcomes are enhanced by economic policies adopted strategically by the incumbent governing party. That is, the election outcomes in Tables 1 and 2 may reflect the response to economic conditions produced by the strategic use of fiscal and/or monetary policy. To look for this, however, the changes in economic policy arising for strategic election purposes need to be distinguished from changes arising for other political purposes, such as those arising from circumstances associated with minority governments or from policy platforms characteristic of the partisan nature of the governing political party. Before we turn to analyze the extent to which different policy objectives may be reflected in economic policy, we first ask

[16] Dropping the coefficient of variation of the unemployment rate from the regressions increases the significance of the remaining performance variables. Results available on request.

whether the data is consistent with aggregate measures of economic policy having their own direct, independent effect on electoral outcomes. Is there a political budget cycle in Canada?

2. Election outcomes and their direct relationship to fiscal and monetary policy

To assess whether there is a direct link between electoral outcomes in Canada and the fiscal and/or monetary policies chosen by the incumbent government, we regress our set of electoral outcomes against two dimensions of fiscal policy (the growth rates of government spending and revenues relative to GDP) and one dimension of monetary policy (the rate of growth of the money base). The latter becomes feasible only following the creation of the Bank of Canada in 1932. In considering the effects of these policy instruments, we test for the effects of the levels of these policies and their variability (through their coefficients of variation) while controlling for a set of other political characteristics that sometimes argued to have their own independent effect on electoral outcomes. These include: the scale of voter turnout (Hansford and Gomez, 2010; Persson, Solevid and Ohrvall, 2013), changes in the size of the voting franchise (Metzer and Richards, 1981; Husted and Kenny, 1997), the partisan nature of the incumbent political party (Hibbs, 1977; liberal = 1; conservative = 0), whether the previous government was a minority government and the length of the previous governing term (Bischoff, 2013). The results are presented in Table 3, where each of our election outcome variables is regressed over two time intervals: the longer period of 39 elections covering both dimensions of fiscal policy and their coefficients of variation; and a shorter period of 23 elections that allows the incorporation of monetary policy (measured as the rate of growth of the money base) and its coefficient of variation.

-- insert Table 3 about here --

The story told by Table 3 is relatively straightforward--there is very little evidence that policy has had any direct opportunistic effect on electoral outcomes. In relation to the re-election prospects of the incumbent governing party, only one of the three policy variables produced substantive evidence of direct government policy influence. This is the case of government spending in the 1935-2015 time period where its growth rate is found to be significantly related to both the likelihood of incumbent re-election and the incumbent's vote share, but inversely so.

Aside from the symmetric positive association of revenue growth with the likelihood of incumbent re-election, all other tax cases and all four monetary policy levels are found to have had no effect on the incumbent's electoral prospects. There is then evidence that fiscal policies have had an effect on election outcomes, but not in the direction posited by business cycle theory. To stimulate the economy in the period leading into an election, the correlations between spending and taxation on the one hand and election outcomes on the other would need to be opposite in sign to those found in the data.

When we turn to look at the effects of fiscal and monetary policy levels on political party structure in columns (5) through (8), we see that there is even less evidence of a political budget cycle. None of the twelve coefficient estimates representing the effects of the three policy levels on the two volatility measures over the two time periods are found to be significantly different from zero. The policy programs adopted by the governing party have then had no measurable effect on the degree of vote shifting arising among political parties.

The results with respect to the variability or unpredictability of government policies are only a little better. Of the 20 different regression coefficients representing the effects of monetary and fiscal policy uncertainty on incumbent electoral success and political party structure, only 2 are significantly different from zero. In the first case, in column (2), greater variability in fiscal spending is found to decrease the likelihood of incumbent re-election and thus is consistent with being considered as an electoral bad. In the second case, in column (8), greater monetary uncertainty is associated with greater instability in the political party structure. Combined with the inflation variability finding from Table 2, there is then evidence of a direct link between monetary policy and political instability through monetary instability.[17]

Before leaving Table 3, it is of interest to note that of the covariates used to control for political influences on electoral outcomes, only two are found to be significant. The first is that being the governing party in a minority government is associated with a greater likelihood of

[17] Note that the significant effect of monetary uncertainty on election outcomes arises through vote volatility rather than the electoral prospects of the incumbent political party. On the role of monetary policy in relation to the political business cycle in Canada, see Ferris (2008).

being re-elected.[18] The second is that the length of the incumbent party's governing tenure is positively associated with vote volatility in Canada. That is, even when controlling for periods of minority government (that are highly unstable with short governing tenures), longer governing terms are found to be associated with greater instability in the political party structure as evidenced by greater vote switching and higher vote volatility.[19] This is opposite to the result found in Bischoff (2013).

3. Political and Economic Influences on Policy

From Tables 1 and 2 we have seen that favourable electoral outcomes for incumbents and political party stability are positively related to economic growth and negatively related to inflation variability. From Table 3 we have also seen that there is no direct link between expansionary fiscal and monetary policies and these favourable outcomes. However, although there is little evidence of a political business cycle in the sense of policy being used expansively in the time period immediately prior to an election, we have also found that fiscal policy and monetary policy volatility are related to election outcomes but in ways that differ from those implied by political business cycle theory. To look more closely at the political influences on government policy we turn to the greater detail available in annual rather than election-based data and use the larger number of observations available to deal analytically with the endogeneity of policy and outcome left to one side in earlier sections. The changed perspective onto policy choices allows closer examination of the extent to which fiscal and monetary policy have been influenced by four types of political concerns: a response to the changing demands of the voting public for publicly provided goods and services, the need to provide good government by facilitating growth and stabilizing the economy about the business cycle, using policy strategically both with respect to the upcoming election and with providing partisan benefits as constrained by the degree of political competition faced in the legislature. With more

[18] In Canada, minority governments often form the first stage of a transition from one party to another. Examples include the Diefenbaker minority government defeat of the Liberal Party in 1957 followed by the large Diefenbaker victory in 1958 and the two Harper minority governments in 2006 and 2008 leading to followed by victory in 2011.
[19] This result is consistent with the surfing hypothesis of election timing. Choosing to last the entire term is to choose not to go earlier under more favourable conditions. This increases the likelihood that economic outcomes over the term were not favourable.

observations and controls for other political characteristics of the political environment we may better isolate the degree to which policy has (or has not) been used strategically by the incumbent political party.

We begin by noting that government policy and economic outcomes are at least partially co-determined. That is, not only do we expect that fiscal and/or monetary policy will respond to economic circumstance, but do so because we expect that policy can and will affect per capita income/output. Hence to measure the response of policy to performance outcomes we need to include in per capita income growth only that portion of output growth that would have been produced by underlying increases in Canada's factors of production and productivity. That is, we must instrument the per capita growth rate with variables correlated with per capita growth but not with other cyclical, strategic or other political uses of policy. Because of Canada's close industrial integration with the U.S. economy (three quarters of all Canadian exports go to the U.S.), Canadian per capita output growth (PC_growth) has become highly correlated with the growth rate of the U.S Index of Industrial Production ($\rho = .698$) without there being a strong possibility that Canada's economic performance or the growth rate of Canada's federal government size has significantly influenced aggregate U.S. incomes or output. This makes the growth rate of the US Index of industrial production, USiip_growth--an instrument that is highly correlated with per capita GDP growth and itself unrelated to the factors determining Canada's fiscal and monetary policy—a good instrument. A regression of USiip_growth on PC_growth to generate a predicted value of real GDP per capita absent policy is highly significant, explaining 35 percent of the variation in the growth rate of per capita output over our time period.[20]

-- Table 4 about here –

The changes observed in the data measuring the growth rates government spending, taxes and the change in the size of the government's deficit (together with monetary policy) represent the net response of the current government to the multiple claims on its policy use. Hence these measures of policy represent governing party's net response to changes in the scale and composition of the voting public, changes in the political characteristics of the parties

[20] More explicitly, PC_growth = .006* (.004) + .003*** (.0003) USiip_growth R^2 = .355 DW = 2.08
where the standard errors are in brackets following the coefficient estimates. * (***) significant at 10 (1) percent.

(partisan type) and the type of government elected (majority versus minority government), changes reflecting response to variations in the business cycle, responses to serious exogenous events (such as world wars), and strategic actions with respect to elections and constraints arising from competing opposition parties. To control for endogeneity while capturing these different dimensions of policy, we use a series of two stage least squares regressions to test a model of government policy choice taking the general form:

$$Government\ Policy = f(position\ in\ the\ business\ cycle, demographic\ and\ heterogeneity\ characteristics\ of\ electorate, minority\ or\ partisan\ election\ outcomes, election\ charateristics, world\ wars\ degree\ of\ competition\ in\ the\ legislature,\ pre-election\ strategic\ behaviour) \quad (3)$$

where PC_growth, used represent the business cycle[21], is instrumented by USiip_growth and the five policy measures that could have influenced economic performance (as indicated in Tables 1 and 2) are: the growth rate of government expenditure as a fraction of GDP, the growth rate of government revenue as a fraction of GDP, the growth rate of the government's deficit (defined as D[ln(G/Y) – ln(T/Y)], the growth rate of the money base (MB) and its moving four-year-based coefficient of variation (as a determinant of inflation variability). The variables used to proxy the conceptual determinants of policy are listed in Table 4 together with their time series properties. Concern with the latter is necessary to avoid spurious correlations arising from the mixed use of stationary and nonstationary variables.

-- insert Table 4 about here --

The results of the two stage least squares models of economic policy choice are presented in Table 5. The results indicate that a linearized version of the model of policy choice outlined in (3) explains roughly 25 percent of the variation in two measures of fiscal policy and over 60 percent of the variation in monetary policy (and 35 percent of its variability). To the extent that the chosen variables represent different aspects of how political factors have influenced policy, the results suggest that politics has more influence on the expenditure side of fiscal policy than

[21] The growth rate of real GDP per capita, PC_growth is stationary about a mean of 1.92% over our time period.

on the revenue side and on the variability of monetary policy (more than its level). The statistics on the under and over-identification tests appearing in the bottom row of Table 5 are consistent with the instrumenting of real GDP per capita with USiip_growth dealing adequately with the endogeneity arising between the policy measures and PC_growth.[22]

Looking across the top row of the table for policy reaction to instrumented per capita growth, the data indicate that fiscal policy is consistently and significantly countercyclical, with spending increasing upwards in response to a downturn in the economy more than does revenue, producing countercyclical fiscal deficits that stimulate the economy. The data also suggest that the two dimensions of monetary policy are somewhat procyclical, but neither the coefficient on the money base growth rate nor its coefficient of variation are significantly different from zero. In terms of more specific political connections to fiscal policy, the data indicate that higher voter turnout is associated with a lower rate of growth in government spending and smaller sized deficits, while a fall (rise) in the proportion of the population that is young (old) is associated with an increase in the growth rate of government spending and larger sized deficits. The data also suggest that periods of minority government and periods when the more liberal party (the Liberal Party of Canada) are in power are associated with spending growth, decreases in the growth rate of taxes and rising deficits, but none of these relationships are significantly different from zero using conventional significance criteria. Periods of minority government are, however, associated significantly with greater monetary policy variability.

While the data indicate that money growth becomes more expansive as the franchise grows in size, monetary policy in the sense of the rate of growth of the money base has been relatively free of other political influences that have influenced fiscal policy, tending to support the claim of central bank independence often made with respect to the Bank of Canada. Where monetary policy is not independent of 'outside influence' is in response to fiscal deficits. The data imply that fiscal deficits have been at least partially financed by changes in high powered money, with the same type of response appearing with respect to the financing of the

[22] The Kleibergen-Paap under-identification test statistic in all cases allows rejection of the hypothesis that the instruments under-identify per capita real GDP. Similarly for all but the growth rate of government revenue, the Hanson J test statistics do reject the hypothesis that the chosen instruments can identify per capita GDP as independent of the error process.

extraordinary expenditures required by WW2.[23] Perhaps surprisingly, the data also suggest that when the money growth rate rises with higher deficits, its predictability, as implied by the inverse movement of its coefficient of variation, increases rather than decreases.

-- Table 5 about here --

Finally, the degree of competition faced by the governing party in the legislature has mattered for fiscal policy, particularly for spending growth. A larger seat majority held by the governing party is associated with a higher growth rate of government spending, higher fiscal deficits and greater variability in the growth rate of high-powered money (independent of party type). However, while the degree of competition in the legislature appears to matter for these dimensions of policy, there is no evidence that the governing party has used either fiscal or monetary policy to stimulate the economy in the period leading into an election. In this sense, the data do not support the hypothesis that government policy has been used opportunistically to support the re-election of the party in power.

While Table 5 treats each policy instrument as independent, the three fiscal policy instruments are necessarily interrelated through the government budget constraint and the two aspects of monetary policy could well be interrelated through unobservables. For this reason, we re-run the three fiscal and two money instruments as separate sets of seemingly unrelated regressions (SUR) and test for the presence of correlations arising among the equation residuals. The results are shown in Table 6.

-- insert Table 6 about here –

The Breusch-Pagan test for independence, shown in the bottom line of Table 6, rejects the independence of the fiscal instruments but does not allow rejection of the hypothesis that the two monetary dimensions are independent of each other.[24] Hence the results in the first three

[23] It is interesting to note the difference in way the two world wars were financed. That is, WW1 was financed largely by running government deficits with substantial increases in the national debt while WW2 featured a more balanced approach between tax increases and smaller sized deficits financed by borrowing (in part from the Bank of Canada).

[24] The correlation matrix of residuals in the fiscal system is

	gov_growth	tax_growth	gpolicy
gov_growth	1.0000		
tax_growth	0.2416	1.0000	
gpolicy	0.3256	0.1078	1.0000

columns of Table 6 are preferred to the fiscal equations in the first three columns of Table 5, while the opposite holds true for the two monetary dimensions.

Correcting for the interactions among the policy instruments in the fiscal system makes the greatest difference for the deficit equation in column (3). Accounting for the correlations arising among the equations' residuals raises the explanatory power (R^2) of the deficit equation from .071 to .555 and reveals as newly significant both the tendency under the Liberal Party for deficits to be lower and for deficits to be larger with greater trading openness. Aside from these differences, the story told for the other aspects of fiscal policy in Table 5 is largely unchanged. The hypothesis that both government spending and deficits are countercyclical is even more strongly confirmed by the data as is the hypothesis that less political competition, as measured by a larger sized governing party majority, leads to larger government (greater spending and fiscal deficits) independent of partisan type and greater monetary uncertainty. Finally, there is again no evidence in the data consistent with government spending, taxation, deficits or monetary policy having been used opportunistically in the period leading into the upcoming election.

One interpretation of the results in Tables 5 and 6 in combination with those of Table 3 is that providing fiscal responsibility and 'good government' has been a winning political strategy for incumbent parties in Canadian federal elections. Tables 1 and 2 show that higher average levels of economic performance over the life of a government results in a better outcome for the incumbent rather than simply having a higher growth rate at the time of an upcoming election. This is consistent with the absence of evidence in Tables 3, 5 and 6 of policy being used in ways that would stimulate the economy in pre-election time periods and positive evidence of policy being used both countercyclically to stabilize the economy and to provide financial stability by preventing the accumulation of long run debt. The finding from Table 6 that longer-lived parties in government in general and the more successful of Canada's governing parties (the Liberal Party) in particular are associated with smaller sized fiscal deficits suggests that voters are cognisant of the cost of larger deficits and rising debt. Finally, the data are also consistent with the hypothesis that greater political competition, as represented in our data set by a smaller sized election victories and hence greater opposition oversight in the

legislature discourages government excess, producing both less spending and lower taxes without producing a significant rise in fiscal deficits.

4. Conclusion

What this analysis makes apparent is that in Canada economic circumstance and government policy have mattered both for the incumbent's election outcome and for the stability of the political party structure without indicating the presence of either a political business or political budget cycle. Rather the data is more consistent with the hypothesis that voters have held the political party in power responsible for the economic performance of the economy arising during its tenure without needing to provide an opportunistic boost in spending or favourable tax reduction in the period leading into an election. This favourable response by the voting public to the provision of 'good governance' not only implies a concern with outcomes over the entire governing period but is consistent with a desire for policy to be used to moderate the effects of the business cycle. Hence evidence of countercyclical fiscal policy in the data helps to explain the inverse relationship found between per capita growth rates and measures of fiscal policy stimulus, a relationship that has sometimes been misinterpreted as implying that government size is too large.

Of the three forms of volatility featured in our analysis, only the volatility of the inflation rate is found to be associated with election outcomes. Here greater inflation uncertainty is associated poorer electoral outcomes, increasing party vote volatility and thus adding instability to the party structure. As has been noted elsewhere, larger seat majorities held by the winning political party (independent of the partisan nature of the party in power) are associated with higher rates of spending and growing fiscal deficits. On the other hand, while the data is not inconsistent with the hypotheses suggested elsewhere that periods of minority and/or liberal government spend more, tax less and run deficits, neither hypothesis is confirmed by the data. Over the post-Confederation time period, not one of these sympathetically signed coefficient estimates is significantly different from zero.

The unanswered question for Canada is whether the changed incentives favouring the strategic use of policy following the introduction of fixed governing terms will introduce policy

opportunism into Canadian federal politics. At present even the fixity of fixed term elections is still under question. Of the four elections held since the Conservative government introduced fixed terms in 2007, only two have been held at their legislated date, the other two, involving minority governments, ended well before their legislated term.[25] To the extent that fixed terms become fixed under majority governments, predetermined terms will allow the governing party to incorporate known implementation lags into the design and timing of policy and hence better gage when the effect of policy choices will be realized. Whether such policy strategies will be adopted by the governing party or rendered mute by voters' rational expectations (a la Brender and Drazen, 2008) remains at present an open question.

[25] The most recent election (2019) has also produced a minority government increasing the likelihood that another election will arise unexpected before its four-year term limit. Because Canadian legislation does not include a minimum vote percentage requirement (such as the 2/3 provision in U.K. legislation), the Prime Minister retains the initiative in generating conditions for an election call under minority governments.

Table 1

Does the Incumbent's Election Outcome depend on Economic Performance? Canada 1870-2015

(standard errors in brackets below)

	Incumbent winner (Logit) (1)	Incumbent winner (Logit) (2)	Vote share of the Incumbent party (3)	Vote share of the Incumbent party (4)	Incumbent winner (Logit) (5)	Incumbent winner (Logit) (6)	Vote share of the Incumbent party (7)	Vote share of the incumbent party (8)
Coverage	$3^{rd} - 42^{nd}$ Elections	15^{th}-- 42^{nd} Elections	$3^{rd} - 42^{nd}$ Elections	15^{th} -- 42^{nd} Elections	$3^{rd} - 42^{nd}$ Elections	15^{th}-- 42^{nd} Elections	$3^{rd} - 42^{nd}$ Elections	15^{th}-42^{nd} Elections
Real per capita growth in the year before the election	2.95 (7.20)	25.76* (13.24)	0.0005 (0.366)	0.548 (0.450)				
Prior average real per capita GDP growth rate					80.44*** (27.64)	80.16** (32.46)	1.250*** (0.460)	2.195[t] (1.44)
Prior CV_per capita growth rate	0.045 (0.064)	0.055 (0.248)	0.0006 (0.0007)	-0.0013 (0.0012)	0.103 (0.108)	0.136* (0.076)	0.0014* (0.0008)	0.003 (0.002)
Prior average Inflation rate	0.040 (0.140)	-0.078 (0.199)	0.0024 (0.0044)	-0.002 (0.005)	-0.144 (0.160)	-0.305 (0.211)	0.0004 (0.0004)	-0.009 (0.006)
Prior CV_Inflation Rate	0.406 (0.261)	0.003 (0.618)	0.004 (0.004)	0.010 (.011)	0.508 (0.388)	0.469 (0.565)	-0.0006 (0.003)	0.021* (0.010)
Prior average unemployment rate[Z]		-0.413 (0.264)		-0.015*** (0.005)		-0.092 (0.154)		-0.008 (0.006)
Prior CV_urate		1.44 (2.21)		0.076 (0.73)		-3.078 (3.447)		-0.046 (0.094)
Constant	0.050 (0.514)	2.79 (2.23)	0.387*** (0.018)	0.456*** (0.043)	-1.157 (0.846)	0.605 (2.10)	0.370*** (0.016)	0.412*** (0.068)
Statistics: Obs. R^2 Durbin Watson Pseudo-R^2	 39 0.082	 27 0.202	 39 .038 1.75	 27 .356 2.91	 39 .275	 27 .211	 39 .079 1.64	 27 .419 2.48

Notes: ***(**)[*] significantly different from zero at 1 (5) and [10] percent; [t] significantly different from zero at 14.3 percent.

In earlier experimentation, current and prior per capita growth rates and multiple four-year windows were experimented with to allow for the incorporation of both present and past outcomes in forming expectations. The current formulation using the prior year's growth rate and the current and past three years for the averages and coefficients of variation best explained the data.

[Z] Unemployment data is available only from the 1921 election onward. Calculated as average unemployment rate over the previous governing period.

Table 2

Does the Stability of Political Party Structure depend on Economic Performance? Canada, 1870-2015 by election

(standard errors in brackets below)

	Constituency level Vote Volatility (1)	Constituency level Vote Volatility (2)	Vote Volatility at National Level (3)	Vote Volatility at National Level (4)	Constituency level Vote Volatility (5)	Constituency level Vote Volatility (6)	Vote Volatility at National Level (7)	Vote Volatility at National Level (8)
Coverage	$3^{rd} - 42^{nd}$ Elections	15^{th}-42^{nd} Elections	$3^{rd} - 42^{nd}$ Elections	15^{th}-42^{nd} Elections	$3^{rd} - 42^{nd}$ Elections	15^{th}-42^{nd} Elections	$3^{rd} - 42^{nd}$ Elections	15^{th}-42^{nd} Elections
Per capita real growth in year prior to election	-0.069 (0.267)	-0.224 (0.275)	0.008 (0.249)	-0.342 (0.381)				
Average prior real per capita GDP growth					-1.575*** (0.458)	-1.346 (1.113)	-1.671*** (0.541)	-2.048 (1.404)
CV_real per capita growth rate	0.0001 (0.0004)	0.0003 (0.001)	-0.0003 (0.0004)	0.001 (0.001)	-0008** (0.0003)	-0.002 (0.002)	-0.001*** (0.0004)	-0.002 (0.003)
Average Inflation rate	-0.004 (0.004)	-0.004 (0.004)	0.003 (0.004)	-0.004 (0.005)	-0.001 (0.003)	0.001 (0.005)	0.006* (0.003)	0.003 (0.006)
CV_Inflation rate	0.001 (0.002)	0.017* (0.008)	0.004* (0.002)	0.022* (0.013)	0.007*** (0.002)	0.010 (0.007)	0.010*** (0.002)	0.012 (0.013)
Previous Unemployment Rate[Z]		0.012*** (0.004)		0.012** (0.006)		0.008** (0.004)		0.007 (0.005)
CV_Unrate		0.055 (0.068)		-0.010 (0.086)		0.124 (0.086)		0.094 (0.119)
Constant	0.173*** (0.019)	0.062 (0.037)	0.094*** (0.019)	0.039 (0.034)	0.193*** (0.015)	0.089* (0.049)	0.117*** (0.019)	0.081 (0.063)
Statistics: Obs. R^2 Durbin Watson	 38 0.030 1.97	 27 .330 2.57	 39 0.021 1.88	 27 .250 2.66	 39 .305 1.92	 27 .374 2.22	 39 .251 1.73	 27 .324 2.25

***(**)[*] significantly different from zero at 1 (5) and [10] percent. See also the notes from Table 1

Table 3

Do Electoral Outcomes Respond to Fiscal Policy and Political Variables? Canada: 1870- 2015 by election

(standard errors in brackets below)

	Incumbent Party winner (Logit) (1)	Incumbent Party winner (Logit) (2)	Incumbent Party Vote Share (3)	Incumbent Party Vote Share (4)	Constituency Vote Volatility using Super-constituencies (5)	Constituency Vote Volatility using Super-constituencies (6)	Party Vote Volatility at the National Level (7)	Party Vote Volatility at the National Level (8)
Coverage	1870-2015	1935-2015	1870-2015	1935-2015	1870-2015	1935-2015	1870-2015	1935-2015
Average growth rate of government spending	-4.26 (4.38)	-17.82** (8.13)	0.100 (0.200)	-0.505*** (0.242)	-0.040 (0.102)	-0.089 (0.198)	-0.176 (0.150)	-0.149 (0.210)
Coefficient of variation of government spending growth	-0.038 (0.034)	-0.093** (0.038)	0.0001 (0.002)	0.001 (0.001)	-0.0003 (0.0004)	-0.003 (0.002)	-0.0006 (0.0008)	-0.0001 (0.001)
Average growth rate of taxation	5.41 (9.51)	70.83* (40.38)	-0.317 (0.345)	0.678 (0.877)	0.245 (0.185)	1.205 (0.787)	0.428 (0.308)	0.821 (0.913)
Coefficient of variation of tax rate growth	0.035 (0.135)	0.149 (0.277)	-0.002 (0.005)	0.005 (0.007)	0.0003 (0.003)	-0.008 (0.007)	-0.002 (0.005)	-0.006 (0.008)
Average rate of Money growth		22.34 (25.98)		0.111 (0.613)		-0.711 (0.450)		-0.603 (0.618)
Coefficient of Variation of money growth rate		0.292 (0.622)		-0.007 (0.016)		0.022 (0.015)		0.030* (0.017)
Voter turnout	-0.033 (0.064)	-0.133 (0.119)	0.003 (0.002)	0.002 (0.003)	-0.002 (0.002)	-0.002 (0.002)	-0.001 (0.003)	-0.003 (0.003)
D(registration proportion)	-0.132 (0.085)	-0.058 (0.202)	-0.002 (0.003)	-0.004 (0.009))	0.003* (0.002)	0.005 (0.006)	0.0006 (0.003)	0.008 (0.008)
Length of previous governing term	0.570 (0.396)	0.168 (0.575)	0.006 (0.016)	-0.002 (0.023)	0.035*** (0.009)	0.042** (0.017)	0.017 (0.012)	0.027 (0.022)
Incumbent Liberal Government	0.978 (0.783)	1.478 (1.456)	0.043 (0.032)	0.070 (0.053)	-0.034 (0.021)	-0.064 (0.042)	-0.029 (0.033)	-0.094 (0.059)
Previous Minority government	2.58** (1.11)	3.32* (1.79)	0.016 (0.030)	0.060 (0.045)	0.027 (0.056)	0.005 (0.048)	0.026 (0.029)	-0.027 (0.058)
Constant	0.062 (4.85)	11.73 (11.75)	0.126 (0.175)	0.216 (0.165)	0.154 (0.166)	0.132 (0.179)	0.144 (0.205)	0.293 (0.206)
Statistics:								
Obs.	39	24	39	24	39	24	39	24
R^2			.169	.350	.470	.622	0.164	.519
Durbin Watson			1.89	2.12	2.07	2.50	1.74	2.62
Pseudo-R^2	.112	.390						

***(**)[*] significantly different from zero at 1 (5) and [10] percent. Monetary policy becomes feasible only following the creation of the Bank of Canada in 1935.

Table 4

Variables determining Policy, Definitions and Time Series Characteristics

Policy Responses to	Variable	Definition	Augmented Dickey Fuller Statistics ADF(145, 1%) = - 3.495 ADF(145, 5%) = -2.887
the Business Cycle	a. Real GDP per capita growth (PC_growth) b. Instrumented real GDP per capita growth	Instrumented by USiip growth,	PC_growth = - 10.09 PC_growth = - 12.17 (predicted) USiip_growth = -12.2
Demographic and heterogeneity characteristics	Urban/rural mix Immigration rate Percentage young Openness	Change in proportion of labour force in agriculture Immigration as a proportion of the population Change in the proportion of the population below 16 (Exports + Imports)/GDP	D(Agric LF) = -9.357 Immigration = -3.364 D2(Pop_young) = -12.18 D(Open) = -8.801
Political characteristics of the government and/or election	Minority government Partisanship Duration of party in government Voter turnout Change in the size of the franchise	Dummy variable (1 if minority 0 otherwise) Dummy variable (1 if liberal 0 if conservative) Year in continuous party governance (across elections) Percentage of registered voters who vote Percentage of the population that is registered to vote	 Party_term = -4.395 Voter Turnout = -3.15 D(registered) = -11.98
Special events WW1 WW2	War effects of WW1 War effects of WW2	Dummy variable (1 if year is between 1914 and 1917) Dummy variable (1 if year is between 1939 and 1945)	
Political competition in the legislature	Incumbent seats	Percentage of seats held by the governing party	Seats = -4.853
Opportunism	Year leading into the upcoming election	Dummy variable = (1 in year prior to election; 0 otherwise)	
Policy Instruments	Growth rate of government expenditures (G/Y) Growth rate of government revenues (T/Y) Log Deficit Growth rate of the Deficit Growth rate of the Money Base (MB) CV of the money growth rate	Ln(G/Y) – Ln(G/Y)(-1) Ln(T/Y) – Ln(T/Y)(-1) Ln(G/Y) – Ln(T/Y) D(Ln(G/Y) – Ln(T/Y)) Ln(MB) – Ln(MB)(-1) CV of MB_growth (4 year)	Gov_growth = -7.091 Tax_growth = -7.689 Deficit = -3.356 D(Deficit) = -7.823 MB_growth = -4.238 CV_mb_growth = -4.361

Table 5

Two Stage Least Squares Regressions relating Policy Choices to Political Variables: Canada, 1870 - 2015

(robust standard errors in brackets below coefficient estimates)

	Growth Rate of Government Spending (G/Y) as a fraction of GDP (1)	Growth Rate of Government Revenues (T/Y) as a fraction of GDP (2)	Growth rate of Government Deficit measured as D(ln(G/Y) -ln(T/Y)) (3)	Growth Rate of the Money Base (4)	Coefficient of Variation of Monetary Base Growth (5)
Coverage	1870 - 2015	1870 - 2015	1870 - 2015	1936 - 2015	1936 - 2015
Per capita GDP growth rate (instrumented)	-1.305*	-0.186	-1.119	-0.112	-3.093
	(0.679)	(0.332)	(0.775)	(0.773)	(7.395)
D(Agriculture's share of the Labour Force)	-4.848	-1.309	-3.539	-2.017	-8.242
	(3.129)	(1.403)	(2.929)	(2.327)	(22.19)
Immigration rate	1.368	0.162	1.207	-1.536	-61.64
	(0.858)	(0.568)	(0.993)	(3.105)	(54.64)
D2(Percentage of the population below 16)	-0.287*	-0.073	-0.214*	-0.046	1.720
	(0.161)	(0.077)	(0.123)	(0.092)	(1.077)
D(Openness)	0.007	0.003	0.003	0.002	0.028
	(0.006)	(0.002)	(0.006)	(0.003)	(0.032)
Minority government	0.037	-0.017	0.054	-0.005	0.532*
	(0.036)	(0.017)	(0.033)	(0.014)	(0.282)
Liberal Government	0.037	-0.004	0.041	0.007	-0.062
	(0.024)	(0.009)	(0.027)	(0.012)	(0.167)
Duration of Party Tenure across elections	-0.005**	-0.002**	-0.003	0.0002	0.006
	(0.002)	(0.0009)	(0.002)	(0.001)	(0.017)
Voter Turnout	-0.008***	-0.0004	-0.008***	0.0003	-0.022
	(0.003)	(0.001)	(0.003)	(0.001)	(0.014)
D(Size of the voting franchise)	-0.002	-0.001	-0.001	0.006**	-0.025
	(0.004)	(0.002)	(0.004)	(0.002)	(0.041)
Percentage of seats won by the winning party	0.005**	0.001	0.003*	-0.0002	0.047***
	(0.002)	(0.001)	(0.002)	(0.0006)	(0.014)
WW1	0.117**	0.018	0.099		
	(0.052)	(0.034)	(0.064)		
WW2	0.190**	0.121***	0.069	0.100***	-0.862*
	(0.093)	(0.039)	(0.079)	(0.029)	(0.437)
Year leading into an election	0.0002	-0.014	-0.014	0.00002	0.070
	(0.026)	(0.010)	(0.027)	(0.010)	(0.221)
Log(Government Deficit)				0.091**	-1.02**
				(0.039)	(0.437)
Constant	0.307**	-0.030	0.338**	0.079	0.050
	(0.146)	(0.066)	(0.144)	(0.093)	(1.05)
Statistics					
Observations	144	144	144	80[t]	78[t]
Centered R^2	.215	.303	.071	0.626	.327
Uncentered R^2	.218	.312	.071	0.836	.704
Underidentification Chi-square (P value)	13.26 (0.000)	13.26 (0.000)	13.26 (0.000)	5.30 (0.02)	5.90 (0.015)
Overidentification Test Hansen J Statistic	0.000	0.000	0.000	0.000	0.000

***(**)[*] significantly different from zero at 1 (5) and [10] percent. [t] Monetary policy becomes feasible only after the creation of the Bank of Canada in 1932. D(), D2() refer to the use of the first and second differences of the variable in brackets.

Table 6

Seemingly Unrelated Regressions for Fiscal Policy and Monetary Policy: Canada, 1870 - 2015

(standard errors in brackets below coefficient estimates)

	Fiscal Instruments			Monetary	Instruments
	Growth Rate of Government Spending (G/Y) as a fraction of GDP (1)	Growth Rate of Government Revenues (T/Y) as a fraction of GDP (2)	Growth rate of Government Deficit measured as D(ln(G/Y) -ln(T/Y)) (3)	Growth Rate of the Money Base (4)	Coefficient of Variation of Monetary Base Growth (5)
Coverage	1870 - 2015	1870 - 2015	1870 - 2015	1936 - 2015	1936 - 2015
Per capita GDP growth (predicted)	-0.953**	-0.136	-0.874[Z]	-0.035	-1.392
	(0.448)	(0.202)	(0.594)	(0.299)	(4.968)
D(Agriculture's share of the Labour Force)	-2.668	-0.999	-3.979	-1.566*	-2.227
	(1.808)	(0.816)	(2.397)	(0.927)	(15.39)
Immigration rate	0.981	0.106	-2.116	0.144	-52.20
	(1.215)	(0.549)	(1.611)	(2.258)	(37.49)
D2(Percentage of the population below 16)	-0.236*	-0.066	0.059	-0.044	1.940**
	(0.127)	(0.057)	(0.169)	(0.047)	(0.795)
D(Openness)	0.004	0.003[Z]	0.015**	0.001	0.023
	(0.004)	(0.002)	(0.005)	(0.002)	(0.031)
Minority government	0.029	-0.018	0.002	-0.009	0.511*
	(0.041)	(0.019)	(0.054)	(0.016)	(0.271)
Liberal Government	0.022	-0.006	-0.070**	0.001	-0.093
	(0.024)	(0.010)	(0.031)	(0.012)	(0.200)
Duration of Party Tenure across elections	-0.005**	-0.002*	0.005	0.0006	0.007
	(0.002)	(0.001)	(0.003)	(0.001)	(0.019)
Voter Turnout	-0.007***	-0.0003	-0.006*	0.0002	-0.020
	(0.002)	(0.001)	(0.003)	(0.001)	(0.015)
D(Size of the voting franchise)	-0.003	-0.001	-0.007	0.006***	-0.029
	(0.004)	(0.002)	(0.006)	(0.003)	(0.042)
Percentage of seats held by Incumbent	0.005***	0.0013*	0.004[Z]	-0.0005	0.046***
	(0.002)	(0.0008)	(0.002)	(0.0006)	(0.011)
WW1	0.142**	0.021	0.595***		
	(0.056)	(0.025)	(0.074)		
WW2	0.167***	0.118***	0.452***	0.113***	-0.844**
	(0.054)	(0.025)	(0.072)	(0.024)	(0.401)
Year leading into an election	-0.011	0.012	0.032	0.0004	0.083
	(0.025)	(0.011)	(0.033)	(0.010)	(0.167)
Log(Government Deficit)				0.098***	-1.018**
				(0.030)	(0.493)
Constant	0.243[Z]	-0.040	0.689**	0.068	0.155
	(0.166)	(0.075)	(0.219)	(0.065)	(1.082)
Statistics					
Observations	144	144	144	78[t]	78[t]
R^2	.233	.278	.555	0.644	.343
Breusch-Pagan test of independence	Chi2(3) = 25.34	Prob= 0.00		Chi2(2) = .324	Prob= .569

***(**)[*]{[Z]} significantly different from zero at 1, (5), (10) and {15} percent. [t] Monetary policy becomes feasible only after the creation of the Bank of Canada in 1932. D(), D2() refer to the use of the first and second differences of the variable in brackets.

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 (1921-2015); 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: D(.) = first different operator; **LN(.)**= logarithm indicator.

GDP = gross domestic 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 = GNP deflator before 1927 and GDP deflator after (1986 = 100). 1870-1926: Urquhart, (1993), 24-25; 1927-1995 (1986=100): Cansim data label D14476; 1981-2015, Cansim II V62470999

N = Population size. 1870- 1926, M.C. Urquhart (1993), Gross National Product, Canada, pp.24-5;1927-1955, CANSIM D31248; 1996-2015, CANSIM Table 051-0005: Cansim D1.

RGDPPC = GDP/PN; **PC_growth =** LnRGPPC – LnRGDPPC(-1)

G = total federal government expenditure net of interest payments.1870-1989: Gillespie (1991: 284-286); 1990-1996: Public Accounts of Canada 1996-97: 1997-2000: Federal Government Public Accounts, Table 3 Budgetary Revenues Department of Finance web site, September 2001. To this we add the return on government investment (**ROI**) originally subtracted by Gillespie for his own purposes. Expenditure is net of interest paid to the private sector. Data on **ROI**: 1870 to 1915: Public Accounts (1917: 64); 1915-1967: Dominion Government Revenue and Expenditure: Details of Adjustments 1915-1967 Table W-1; 1916-17 to 1966-67: Securing Economic Renewal - The Fiscal Plan, Feb 10, 1988, Table XI; 1987-88 to 1996-97: Public Accounts 1996, Table 2.2. Interest on the Debt (**ID**) was subtracted out (with adjustment for interest paid to the Bank of Canada (**BCI**) ultimately returned to the government). Data on **ID**: 1870-1926: Leacy et al. (1983: Series H19-34): Federal Government budgetary expenditures, classified by function, 1867-1975; 1926-1995: Cansim D11166. 1996-2000: Cansim D18445. Finally, data for **BCI:** copied by hand from the Annual Reports of The Bank of Canada, Statement of Income and Expense, Annually, 1935-2000. Net Income paid to the Receiver General (for the Consolidated Revenue Acct). Note: all government data are converted from fiscal to calendar years, and allows for a change in the definition of the fiscal year in 1906/07, as described in Gillespie (1991: Appendix C).

GSIZE = non-interest federal government, direct public expenditure, calculated as: **G/GDP.**

MB = Money Base. Metcalfe, Redish and Shearer, New Estimates of the Canadian Money Stock 1871-1967; 1967-2015, Cansim B1646 (annual average of monthly data). **GROWTHMB = LnMB – LnMB(-1)**

T = Government revenues 1868-1989: W. Irwin Gillespie, *Tax, Borrow and Spend: Financing Federal Spending in Canada, 1867 - 1990*, Carleton University Press, 1991, pp.284-286; 1996-97, Public Accounts of Canada; 1997-2015: Federal Government Public Accounts, Table 3 Budgetary Revenues Department of Finance web site, September 2001. **TSIZE = T/GDP**

LNDEFICIT= lnGsize – LnTsize (used because the difference, GSIZE – TSIZE is often negative).

IMRATIO = immigration/POP. Immigration: 1870 1953 O.J. Firestone Canadas Economic Development 1867–1953 Table 83, Population, Families, Births, Deaths (in thousands); 1954–1995; Cansim D27; 1996–2015 Cansim II v16.

YOUNG = percentage of the population 16/17 and younger; 1870–1920, Lacey et al. (1983) interpolated from census figures Table A28-45 sum of columns 29, 30, 31, and 32, all divided by 28; 1921–1970 Cansim C892547; 1971–2015 Cansim II v466965.

EXPORTS and IMPORTS = 1929-1960, Leacy (1983), Series G383, 384; 1960-1995, CANSIM series D14833 & D14836; 1996-2014, CANSIM II v647592. **Openness** = EXPORTS and IMPORTS/GDP

USiip = Index of Industrial Production for the United States. 1870-1929: Table A15. NBER, Nutter; 1930-1970, Table A16. (BEA) Bureau of Economic Analysis;1971-1995: Cansim D360048 (1987=100);1996-2015, U.S. Department of Commerce, Business Cycle Indicators, Index of Industrial Production 1992=100. **USiip_growth =** LnUSiip – LnUSiip(-1).

Unemployment rate: 1919-2016; Annual average of monthly figures, both sexes 15 years and older, Cansim II Series No. V2062815.

2. Political variables and data sources:

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:

GOVERNING TERM = number of years since the current parliament started.

DURATION OF PARTY TENURE = number of years since the party was first elected.

ELAPSE = the number of years since the last election.

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

INCUMBENT = 1 if the party winning the current election was the previous governing party; = 0 otherwise.

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

MINORITY = 1 if the governing party was part of a minority government; = 0 otherwise.

VOTONG FRANCHISE = (number of electors on voter lists/Population)

VOTER TURNOUT = (number of voters/registered)

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

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