**Elections, Economic Outcomes and
Policy Choices 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 cycle focused on 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

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[A]n oft-heard defense of the economics-elections research agenda is that robust economic voting brings about accountability. But the implication—that economic voting, through the policies of voter-dependent elites positively influence subsequent performance—is rarely put to a test. New directions in the field should pursue the economic vote’s down-stream effects on public policy and performance. Establishing a robust impact of economic voting would help justify the expectation of a strong economic vote and its study. Hellwig and Marinova (2017).

In this paper we examine the relationship arising between economic and electoral outcomes in Canada and then follow that linkage backwards to assess the role that economic policy has or has not played in producing these relationships. While much has been written on the link between economic performance and electoral outcomes via the popularity or vote function (see Lewis-Beck and Stegmaier (2000 and 2013) and Kirchgassner (2017)) and on the linkage between policy and elections via the political budget cycle (see Rogoff and Sibert (1988) and Brender and Drazen (2008)), the link between adopted government policy and performance outcomes is less well established. Weakness in establishing a strong link between adopted policies and performance has led to a growing interest in the volatility of both policy and electoral outcomes as a new form of linkage, not always in flattering ways.³ Here we use the renewed interest in the role of policy volatility to re-examine the multiple forms of electoral, economic performance and policy interdependence in Canada over the long 1870 to 2015 time period.

The availability of long data series makes the use of time series analysis for Canada feasible and the long history of stability in its underlying political and legal institutions (since Confederation in 1867) makes its use more reliable. This stability has been used to direct critical attention to such questions as whether there is a Canadian political business cycle, whether federal party platforms translate into adopted policy, to what extent is there an incumbency advantage, and what factors explain the length of a governing term and the characteristics determining political party structure.⁴ In Canada various parts of the relationship arising among economic circumstance, economic policy and election outcomes have been studied with mixed

³ Papers linking economic outcomes, policy and political volatility include Brunetti (1997, 1998), Henisz (2004), Mobarak (2005), Varvarigos (2007), Nooruddin and Chhibber (2008), Jong-A-Pin (2009), Klomp and de Haan (2009), Alfonso and Furceri (2010), 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).

⁴ Petry (1995), Reid (1998), Heckelman (2002), Kendall and Rekkas (2012) and Ferris and Voia (2020).

and often contradictory findings. For example, Nadeau and Blais (1993) and Nadeau, Blais, Nevitte, and Gidengil (2000) find that changes in unemployment matter most to Canadian voters while Johnston (1999) notes the presence of a popularity cycle but is skeptical of its relationship to economic factors and a political business cycle. At the level of federal elections, Reid (1998) argues for a manipulated budget cycle (over opportunistic election timing) while Ferris and Voia (2011) find evidence of opportunistic timing in the characteristic that business cycle peaks lead rather than follow election calls and evidence of a political budget cycle only if the hazard of an election rather than actual election times are used (Voia and Ferris 2013). Again, at the federal level, Kneebone and MacKenzie (1999) find evidence of both partisanship and opportunism whereas Serletis and Afxentiou (1998) find no evidence for the existence of either a political or partisan cycle in government policy data. At the provincial level, both Petry, Imbeau Crete and Clavet (1999) and Kneebone and Mackenzie (2001) find evidence of opportunistic cycles in fiscal policy among the Canadian provinces.

As the above discussion suggests, one important complication in the analysis of politically motivated policy use in a Westminster democracy such as Canada's arises from the ability of the governing political party (through the Prime Minister) to control the timing of elections.⁵ This flexibility in election timing has made problematic its strategic role: pitting the hypothesis that election dates are chosen (surfaced) 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. It is unfortunate, however, that the focus on the potential for the opportunistic use of policy has detracted attention from the consideration of other uses for policy

⁵ Note that many Westminster parliamentary democracies 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 both a confidence requirement and a fixed four-year governing term has made the reliability of the 'fixed' election term problematic (even for majority governments). Unlike the United Kingdom, for example, there is in Canada no minimum vote requirement established before an election can be called.

that voters may find important. In what follows we incorporate a larger number of these dimensions into the policy choices made by Canada's governing parties.

Our analysis begins by asking whether for Canada there is evidence that electoral 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 both the levels and the volatilities of the growth rate of real per capita income, unemployment and the rate of inflation.⁶ Is there evidence of a stable popularity or vote function in Canada and is that evidence consistent with the existence of an (opportunistic) political business cycle? We then broaden the focus beyond the electoral prospects of just the governing party and 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.

Finding evidence that economic outcomes matter electorally but not in ways that are consistent with the existence of a political business cycle creates a policy puzzle. While one interpretation is that the performance outcomes that benefit the incumbent have been produced by well chosen economic policies, an alternative hypothesis is that successful governing parties and party stability have simply benefited from exogenously fortuitous performance outcomes. To examine whether electorally beneficial performance outcomes could have resulted directly from policy choices we ask whether the underlying levels and variability of non-opportunistic fiscal and monetary policies promoting 'superior overall economic performance' align temporally with the actions needed to produce favourable election and stable party structure outcomes. Do regimes with higher growth rates of government spending and monetary expansion or lower growth rates of taxation and less policy volatility face better election prospects and greater political party stability? In looking for the direct effect of regime length policies on election prospects—whether there is evidence of a non-opportunistic political budget cycle--the analysis

⁶ Through the paper annual volatility is measured as the coefficient of variation (cv) —a 4-year lagged standard error divided by its 4-year mean. In relation to the election regressions of Tables 1 through 3, the cv is an average of the yearly cv's over the incumbent's current governing term.

uses 39 of the 42 federal elections that have followed the adoption of Canada's Westminster parliamentary structure in 1867.⁷

An alternative route to uncovering the more important connections among policy, economic and electoral outcomes is to assess the role that different political objectives have played in the design and implementation of the actual policies governments adopted over time. This allows the extension of the database beyond the relatively small base of elections to the greater number of observations available in annual time series data. Annual observations on policy choices are then used to establish the links between federal policy choices and performance characteristics that improve either the incumbent's electoral results or political party stability while controlling for the effects produced on policy by other economic and political actions arising for 'non-economic performance' reasons.⁸ More specifically, policy changes directed at providing good governance by countering the business cycle must incorporate the demands on fiscal and monetary policy arising from the evolving program demands of the voting public and the specific partisan demands of the current government's core supporters. Recognition of Wagner's Law and counter-cyclical policy use raises a significant identification problem since policies and economic outcomes will be at least 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 with outcomes may then serve to isolate which policies have produced the income and unemployment rate movements that correspond to observed 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

⁷ 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 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.

⁸ The use of annual data also increases the typical number of observations in each test from 39 to 144.

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

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:

$$\text{Incumbent winning} = \text{Prob}(\text{incumbent winner} = 1 | X) + \text{error (logistic)} \quad (1)$$

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 either as the annual value arising in the year prior to an election or as a four-year average encompassing the four years that lead into an election year. The volatility of each performance measure is measured as its coefficient of variation, the standard deviation normalized by its mean.⁹

⁹ 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.

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 segments of the voting public and offer competing policy programs, vote switching among political parties may be a more meaningful indicator of voter unrest and political instability.¹⁰ To capture these latter possibilities we model the two intensive margins as:

$$\text{Incumbent vote share} \mid \text{Party vote volatility} = f(X) + \text{error}(iid) \quad (2)$$

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

Because the growth rate of per capita GDP will register strongly in our results and the time dimensionality of its effect will matter for evaluating the role of policy, we present the results of two separate tests: whether the growth rate leading into the election or the average growth rate arising over the entire governing term will matter more to voters. To do so columns (1) through (4) in the two following table present the results using the per capita growth rate arising in the year immediately prior to the upcoming election while columns (5) through (8) use the average per capita growth rate arising over the four years leading into the upcoming election instead.¹¹ The tables are also subdivided by the fact that one important measure of performance, the unemployment rate, is available in Canada 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

¹⁰ 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.

¹¹ The average duration between elections in Canada is slightly under 4 years. In dating the incidence of pre-election per capita growth, we experimented with using the actual year of the election and a year split about July. The year prior to the election was the most informative of the three alternatives.

15th to the 42nd election.¹² A complete list of variables used, sources and descriptive statistics including time series properties is presented the Data Appendix at the end of the paper. A more detailed treatment of annual data used to assess the incidence of policy is given in Table 4.

In Table 1 we examine the effects of economic performance on the electoral prospects facing the incumbent governing party. A logit representation of equation (1) is used to model the likelihood of an incumbent winning re-election, where the coefficient estimates presented in columns (1), (2), (5) and (6) are the more meaningful marginal fixed effects rather than logit regression coefficients. The coefficient estimates reflecting the marginal effects on the incumbent's vote share in columns (3), (4), (7) and (8) reflect the OLS coefficients of a linearization of equation (2). Scanning Table 1, two features immediately stand out. First, the effects produced by the average per capita GDP growth rates arising over the incumbent government's term (in the second half of the table) dominate in both size and significance the per capita GDP growth effects arising in the period leading into the upcoming election (in the first half of the table). While only one of the four coefficients of the annual per capita growth rates in the year leading into the election 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 1 percent level. The marginal effects of a one standard deviation increase in the average growth rate increases the probability of re-election by roughly .5 percent.¹³ The second observation is that the set of economic outcome variables predict an incumbent winning with roughly 70% accuracy while explaining between 20 and 40 percent of the variation in incumbent's vote share. Hence to the extent that the correlations capture causation, aggregate economic performance explains only (a sometimes small) part of the incumbent's election outcome.¹⁴ 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.

¹² 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.

¹³ That is, $.028 \times 17.33 = .49$.

¹⁴ It is important to note that while we focus 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 on 2018 U.S. election outcomes.

-- insert Table 1 about here --

As noted above, 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.¹⁵ 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 for the overall performance that arises under the governing political party. Voters are less responsive to the signal of a rising per capita growth rate in the period immediately before the upcoming election than they are to average outcomes over the period of governing tenure.¹⁶

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 income growth rate in the year leading into the election.¹⁷ Reading the unemployment effect together with the growth rate effect across the eight columns, it appears that incumbent electoral success is associated with either a higher average per capita growth rate or a lower unemployment rate but not both at the same time.¹⁸

For the incumbent party, then, the average per capita growth rate realized over its governing term and/or the average unemployment rate over the prior governing term 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) (7) and (8) present the only

¹⁵ The average per capita growth coefficient is significantly different from zero using a 14 percent confidence interval when the unemployment rate is included.

¹⁶ The correlation between the two is -.31. While growth rates are often used to explain the likelihood of incumbent electoral success in the political literature (Fair, 1978), 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 incidence and length of the time interval used in the growth rate.

¹⁷ Nadeau and Blais (1993) find that it is not the unemployment rate itself but whether it has risen or fallen relative to the recent past that matters. In our case it is worth noting that when the coefficient of variation of the unemployment rate is dropped from the regressions, the prior unemployment rate becomes significant.

¹⁸ The average per capita growth rate and unemployment rates over the shorter 1921 to 2012 time period are inversely correlated ($\rho = -.317$).

other instances of statistical significance. In all these cases the volatilities of the income growth and inflation rates are 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 performance 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 political 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.¹⁹ 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 reinforce political choices and 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. To the extent that ex post variability is a reflection of 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 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.²⁰ This suggests that the economic performance of the economy has a much

¹⁹ For the special circumstances used to construct these indices for Canada, see Ferris, Winer and Grofman (2016).

²⁰ Dash and Ferris (2018) find similar effects with respect to Indian States.

wider effect on political stability than simply one of dictating the future electoral prospects of the incumbent party. Inspection of Table 2 also reveals that the average rate of growth of per capita income (in columns (5) through (8)) is more informative than the annual growth rate in the year leading into the election for explaining the evolution of vote volatility over time., reinforcing the findings of Table 1. Together the data implies that overall income/output performance matters more for election outcomes 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 for the incumbent party (as in Table 1) but for the overall set of party 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 alternates in sign and has only one coefficient estimate consistent with higher inflation rates increasing vote switching among new and existing political parties.²¹

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

²¹ Dropping the coefficient of variation of the unemployment rate from the regressions increases the significance of the remaining performance variables. Results available on request.

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 types of inflation coefficients: the coefficient of variation of inflation indicates a significantly positive relationship with vote volatility while the level coefficient indicates no relationship with volatility across types or time periods. Greater variability in the income 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 election outcomes for the incumbent party and political party stability respond favourably to economic performance while rejecting the hypothesis that this connection reflects election opportunism, as expected by political business cycle theory. Because economic outcomes are not exogenous, however, this does not mean that these electorally successful measures of performance were not produced by the economic policies adopted 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 use of fiscal and/or monetary policy for reasons that are not opportunistic in nature but reflect what we will call “good governance”. To look for how economic policy has affected election prospects in this manner, the provision of good governance needs to be distinguished from policy changes arising for other political purposes. These would include spending and tax changes arising from circumstances associated with minority governments or for policy platform changes characteristic of the partisan nature of the current governing political party. Before we turn to analyze the extent to which output changes can be attributed to the different objectives motivating Canadian economic policy, we first ask whether the electoral outcomes observed above could have resulted from the underlying economic policies needed to produce these performance effects. Is there evidence of that the term policies adopted by different governing parties have produced a different, non-opportunistic political budget cycle?

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

To assess whether the performance outcomes that trigger favourable electoral outcomes are the direct result of the underlying fiscal and monetary programmes that characterize the policy regime of a governing party, we regress our set of electoral outcomes against two

dimensions of fiscal policy (the ratios of growth rates of government spending and taxes relative to GDP) and one dimension of monetary policy (the growth rate of the money base). Table 3 then presents the results of regressing the levels of these policy measures and their volatility, again measured as their coefficient of variation, on election outcomes for the incumbent party and for political party stability, as reflected in constituency and national vote volatility. We note that Canadian monetary policy becomes feasible only following the creation of the Bank of Canada in 1932 and then only in periods when the exchange was not fixed.²² Each election outcome variable is regressed over two time intervals: the longer period of 39 elections covering both dimensions of fiscal policy and their coefficients of variation; and the shorter period of 24 elections that allow the further incorporation of monetary policy and its variability.

-- insert Table 3 about here --

The story told by Table 3 is relatively straightforward--there is very little evidence that the policy programmes adopted by the governing party are the underlying reason for the performance outcomes that Tables 1 and 2 indicate are consistent with incumbent electoral success or greater structural political party stability. Not only is the explanatory power in each regression quite low (none have R^2 's exceeding .200) but the few coefficient estimates that are significant typically have signs that are often opposite to what would be expected if policy was inducing electorally successful output performance. In particular, higher (rather than lower) rates of government spending growth and higher (rather than lower) taxation growth rates are associated with a greater likelihood of re-election and a larger share of the vote. Interpreted literally, the results are more consistent with the electorate punishing (rewarding) an incumbent party that increases (decreases) government size than with an incumbent choosing to gain voters' favour by spending more and taxing less. Neither dimension of monetary policy is associated with incumbent success.

When we look at the effects of fiscal and monetary policy programmes on political party structure in columns (5) through (8), we find a somewhat stronger story. Six of the twenty coefficient estimates are found to be significantly different from zero, with five of the six

²² Canada had fixed exchange rates from 1939 to 1952 and then again from 1962-1970.

coefficient signs consistent with policy programmes having a significant effect on political party stability. The strongest policy effect is associated with taxation, with three of four coefficient estimates found to be significantly positive in sign. Historically in Canada, higher rates of taxation have been associated greater structural party instability as voters switch their allegiance among constituency candidates and contending political parties. In the post Bank of Canada time period, monetary policy has also been found to have affected national level vote volatility. Whether or not Canadian monetary policy is independent of political influence, the data finds that higher rates of money growth are linked to greater stabilizing of the vote distribution among national parties while increases in monetary volatility are linked to greater instability.²³ The latter finding fits nicely with the Table 2 result that the volatility of inflation, more so than its level, is linked to structural political party stability.

3. Political and Economic Influences on Policy

From Tables 1 and 2 we have seen that election results for the governing party and for political party stability are positively related to the average per capita growth rate arising over the incumbent government's tenure and negatively related to term unemployment rates and to a lesser extent inflation rate variability. From Table 3 we have also seen that there is very little evidence of a direct link between expansionary fiscal and monetary policies and these favourable electoral outcomes. In this section we turn to the greater detail available in the use of annual rather than election-based data and use the larger number of observations available on policy choices to expand the number of alternative political and economic influences on policy while dealing explicitly 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 stabilizing the economy about the business cycle and in response to external shocks such as world wars, the potentially different policy concerns of minority governments and partisan party differences, together with differences in the degree of political

²³ For a more detailed analysis of Bank of Canada's political independence see Ferris (2008).

competition faced by the governing party in the legislature. With more observations and controls for other political influences on the policy 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.²⁴

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:

$$\text{Government Policy} = f(\text{position in the business cycle, demographics, heterogeneity of the economy and electorate, minority, partisanship, external shocks, competition in the legislature, opportunistic behaviour}) + \text{error}(iid) \quad (3)$$

²⁴ 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.

where **PC_growth**, used represent policy response to the business cycle,²⁵ 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).

As the functional form suggests, the changes observed in the data measuring the growth rates government spending, taxes and the growth in the size of the government's deficit (together with monetary policy) represent the net response of current policy makers to the multiple claims on them. In providing goods and services and arranging for their finance, policy makers respond to the changing demands of voters and the evolving nature of productive capacity. To reflect some of these changes we use the proportion of the labour force in agriculture (**agric**) and the share of exports and imports in GDP (**openness**) to capture compositional changes in Canada's industrial output and rural/urban effects on the level and composition of programme demands and their finance. The immigration rate (**immigration**) and percentage of the population below 16 (**young**) are used to reflect demographic influences on policy. In addition, the demands on policy and its composition may change in response to the evolving political nature of the voter concerns as reflected by changes in the scale and composition voter participation, that is, the scale of voter turnout (Hansford and Gomez, 2010; Persson, Solevid and Ohrvall, 2013, **voter turnout**) and changes in the size of the voting franchise (Meltzer and Richards, 1981; Husted and Kenny, 1997, **registered**). In addition, different governments may exhibit systematic differences in their views with respect to government size and/or running deficits as reflected in the partisan nature of the incumbent political party (Hibbs, 1977, **liberal** = 1; **conservative** = 0), whether the incumbent party was part of a minority government (**minority**), the length of time the incumbent remained in office (Bischoff, 2013, **party term length**). and the constraint (or lack thereof) imposed by political competition in the House (**seats**). The more traditional uses of policy to provide good government include counter-

²⁵ The growth rate of real GDP per capita, **PC_growth** is stationary about a mean of 1.92% over our time period.

cyclical spending and taxation (**instrumented real income per capita**) plus the use of policy to counter serious exogenous events (world wars, **WW1** and **WW2**). To reflect the possibility of more strategic uses of policy to enhance the electoral prospects of the governing we include a dummy variable taking the value 1 in the year before an election, 0 otherwise (**year leading into the election**) and to reflect the degree of constraint that competing parties can place on the governing party's ability to provide special benefits to its core supporters we use the seat majority held by the governing party (**seats**) as a measure of the lack of political competition in the legislature. The variables used to proxy the conceptual determinants of policy are listed in Table 4 together with their time series properties. Note that the differencing of some of these time series variables was necessary to avoid spurious correlations arising from the mixed use of stationary and nonstationary variables.²⁶

-- 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 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). In addition, many of the variables chosen to represent difference influences on policy are found to have some significant influence on at least one type of policy objective with others become significant if the confidence interval is extended marginally beyond its traditional limit.²⁷ 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 on the revenue side and on the variability of monetary policy (more than its level). On the other hand, the results also suggest that political influences have had somewhat less of an influence on monetary policy. 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

²⁶ Agriculture's share of the labour force, the proportion of the population that is registered to vote, openness and the proportion of the population below 16 are all nonstationary variables that need to be differenced in order to be related to the policy variables that are all stationary.

²⁷ Five additional coefficient values become significant when the confidence interval is extended to 15%.

adequately with the endogeneity issues that arise between the policy measures and PC_growth.²⁸

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 counter-cyclical, with spending increasing upwards in response to a downturn in the economy more than does revenue, producing counter-cyclical fiscal deficits that on net stimulate the economy. The data also suggest that monetary policy is somewhat counter-cyclical and its variability contractionary, however, neither coefficient estimate is 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 rise (fall) in the growth rate of the proportion of the population that is young (old) is associated with an decrease in the growth rate of government spending and smaller sized deficits. The longer one political party has remained in office (across terms), the lower has been both the growth of government size and budget deficits. The data also suggest that periods of minority government and periods when the more liberal of the two dominate political parties (the Liberal Party of Canada) has been in power are associated with spending growth, decreases in the growth rate of taxes and rising deficits, but these relationships are only weakly significant. Monetary policy, on the other hand, appears to be independent of partisan influence, with only periods of minority government 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

²⁸ The Kleibergen-Paap under-identification test statistics allow rejection of the hypothesis that the instruments under-identify per capita real GDP. The Hansen J test statistics do not allow rejection of the hypothesis that the chosen instruments identify per capita GDP are independent of the error process.

extraordinary expenditures required by WW2.²⁹ Perhaps surprisingly, the data also suggest that when as money growth rates rise with higher deficits, the predictability of that growth rate, as implied by the change in its coefficient of variation, decreases rather than increases.

-- Table 5 about here --

Finally, the degree of political 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. In this case we use a control function approach whereby the residual of a first stage regression of *USiip* and the political variables on **PC_growth (e)** is used together with **PC_growth** to control for endogeneity.³⁰ The results are shown in Table 6.

-- insert Table 6 about here --

²⁹ It is interesting to note the difference in the way the two world wars were financed. WW1 was financed largely by running government deficits with substantial increases in the national debt while WW2 featured more of a reliance on tax increases with smaller sized deficits financed by borrowing (in part) from the Bank of Canada.

³⁰ The control function was firstly introduced by Heckman and Robb (1985). It models the endogeneity in the error term using a two stage estimation procedure and is treating endogeneity as an omitted variable. The residual from the first stage acts as a covariate (bias correction term) that corrects for the inconsistency of the feasible generalized least squares used to estimate the SUR model.

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.³¹ Hence the results in the first three 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.

While correcting for the interactions among the policy instruments improves generally the fit of the three equations in the fiscal system, the greatest difference appears in 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 .559 and reveals as newly significant both the tendency under the Liberal Party for deficits to be lower (rather than higher) 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 5 and 6 of policy being used in ways that would stimulate the economy in pre-election time periods and positive

³¹ 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

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 findings from Tables 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

As the quote from Hellwig and Marinova that began this paper suggests, establishing a link between underlying economic policy and the performance outcomes that win electoral favour is a needed but difficult problem. It requires the disentangling of the many economic and political concerns that interact in observed policy. In the case of Canada, what the data make apparent is that economic circumstance and government policy matter for incumbent party electoral success and the stability of the political party structure but not in ways that are consistent with the presence of 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 responding to opportunistic spending or favourable tax reduction in the period leading into an election. The response by the voting public to outcomes arising over the entire governing period implies a demand for 'good governance', a desire for policy to be used to provide for the evolving demands of a growing economy and to moderate the destabilizing effects of the business cycle. In this sense evidence of counter-cyclical fiscal policy use 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 (and its underlying cause in greater monetary volatility) is associated with poorer electoral outcomes and greater instability in the political party structure. As has been noted elsewhere, the lack of political competition reflected in larger seat majorities held by the winning political party (independent of the partisan nature of the party in power) is associated with higher spending rates and growing fiscal deficits. On the other hand, while the data is not inconsistent with the hypotheses that periods of minority and/or more liberal government spend more, tax less and run deficits, neither hypothesis is confirmed by the data. Over the post-Confederation time period, only one of the 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 the actual 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 'fixed' term.³² 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 gauge 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.

³² 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, from 1870 by election
(robust standard errors in brackets below coefficient estimate)

	Incumbent winner (Logit mfx) (1)	Incumbent winner (Logit mfx) (2)	Vote share of the Incumbent party (3)	Vote share of the Incumbent party (4)	Incumbent winner (Logit mfx) (5)	Incumbent winner (Logit mfx) (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	0.631 (1.53)	5.09 (2.80)	0.0005 (0.366)	0.548 (0.450)				
Average real per capita growth rate over incumbent's governing term					15.93*** (6.38)	17.33** (7.95)	1.250*** (0.460)	2.195 ^t (1.44)
CV_per capita growth rate over incumbent's governing term	0.010 (0.013)	0.011 (0.045)	0.0006 (0.0007)	-0.0013 (0.0012)	0.020 (0.020)	0.029* (0.016)	0.0014* (0.0008)	0.003 (0.002)
Average inflation rate over incumbent's governing term	0.009 (0.03)	-0.015 (0.038)	0.0024 (0.0044)	-0.002 (0.005)	-0.028 (0.033)	-0.066 (0.045)	0.0004 (0.0004)	-0.009 (0.006)
CV_inflation rate over incumbent's governing term	0.086 (0.053)	0.001 (0.122)	0.004 (0.004)	0.010 (.011)	0.101 (0.076)	0.101 (0.122)	-0.0006 (0.003)	0.021* (0.010)
Average unemployment rate during incumbent's governing term ^z		-0.082** (0.04)		-0.015*** (0.005)		-0.020 (0.032)		-0.008 (0.006)
CV of unemployment rate in incumbent's governing term		0.284 (0.457)		0.076 (0.73)		-0.666 (0.731)		-0.046 (0.094)
Constant			0.387*** (0.018)	0.456*** (0.043)			0.370*** (0.016)	0.412*** (0.068)
Predicted Pr(incumbent winner)	.691	.729			.728	.684		
Logit and OLS Statistics: Obs. R ² Durbin Watson Pseudo-R ²	39 0.081	27 0.181	39 .038 1.75	27 .356 2.91	39 .275	27 .211	39 .174 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, from 1870 by election
(robust standard errors in brackets)

	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 real per capita growth rate during the incumbent's governing term					-1.575*** (0.458)	-1.346 (1.113)	-1.671*** (0.541)	-2.048 (1.404)
CV of real per capita growth rate of incumbent's term	0.0001 (0.0004)	0.0003 (0.001)	-0.0003 (0.0004)	0.001 (0.001)	-0.008** (0.0003)	-0.002 (0.002)	-0.001*** (0.0004)	-0.002 (0.003)
Average inflation rate over incumbent's governing term	-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 of the inflation rate over incumbent's governing term	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)
Average unemployment rate over incumbent's governing term ²		0.012*** (0.004)		0.012** (0.006)		0.008** (0.004)		0.007 (0.005)
CV of the unemployment rate over incumbent's governing term		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 and Political Party Stability respond to Term Policy Characteristics?
 Canada, from 1870 by election
 (robust standard errors in brackets)

	Incumbent Party winner (Logit mfx) (1)	Incumbent Party winner (Logit mfx) (2)	Incumbent Party Vote Share CORC (3)	Incumbent Party Vote Share CORC (4)	Constituency Vote Volatility (5)	Constituency Vote Volatility (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 (G/Y)	0.224 (0.888)	-1.990 (1.387)	0.154 (0.148)	-0.450** (0.157)	-0.051 (0.106)	-0.064 (0.100)	-0.169 (0.111)	0.075 (0.112)
CV of growth rate of Government Spending (G/Y)	0.001 (0.009)	-0.007 (0.004)	0.0003 (0.001)	-0.0001 (0.0001)	-0.001 (0.001)	-0.001* (0.0005)	-0.001 (0.001)	-0.001 (0.001)
Average growth rate of Taxation (T/Y)	-0.295 (2.16)	9.665** (3.99)	-0.482* (0.243)	0.995** (0.437)	0.591** (0.232)	0.508* (0.283)	0.540** (0.259)	0.075 (0.293)
CV of growth rate of Taxation (T/Y)	0.001 (0.026)	-0.026 (0.031)	-0.004 (0.002)	-0.007* (0.004)	-0.003 (0.003)	-0.006 (0.005)	-0.004 (0.004)	-0.005 (0.006)
Average Money Base growth rate		-1.33 (2.44)		0.092 (0.269)		-0.395 (0.250)		-0.623** (0.244)
CV of growth rate of Money Base		-0.018 (0.080)		0.001 (0.011)		0.024 (0.015)		0.027* (0.015)
Constant			0.401*** (0.017)	0.377*** (0.028)	0.161*** (0.011)	0.152*** (0.022)	0.102*** (0.014)	0.127*** (0.024)
Prob(incumbent winner)	.641	.737						
Statistics:								
Obs.	39	24	38	24	39	24	39	24
R ²			.077	.161	.024	0.178	0.085	0.196
DW(transformed)			2.09	1.94	1.98	1.87	1.74	2.05

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

Table 4
Annual variables used, Definitions and Time Series Characteristics

	Variable	Definition	Augmented Dickey Fuller Statistics ADF(145, 1%) = - 3.495 ADF(145, 5%) = -2.887
Policy Responses to 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* (0.679)	-0.186 (0.332)	-1.119 ^z (0.775)	-0.112 (0.773)	-3.093 (7.395)
D(Agriculture's share of the Labour Force)	-4.848 ^z (3.129)	-1.309 (1.403)	-3.539 (2.929)	-2.017 (2.327)	-8.242 (22.19)
Immigration rate	1.368 (0.858)	0.162 (0.568)	1.207 (0.993)	-1.536 (3.105)	-61.64 (54.64)
D2(Percentage of the population below 16)	-0.287* (0.161)	-0.073 (0.077)	-0.214* (0.123)	-0.046 (0.092)	1.720 ^z (1.077)
D(Openness)	0.007 (0.006)	0.003 (0.002)	0.003 (0.006)	0.002 (0.003)	0.028 (0.032)
Minority government	0.037 (0.036)	-0.017 (0.017)	0.054* (0.033)	-0.005 (0.014)	0.532* (0.282)
Liberal Government	0.037 ^z (0.024)	-0.004 (0.009)	0.041 ^z (0.027)	0.007 (0.012)	-0.062 (0.167)
Duration of Party Tenure across elections	-0.005*** (0.002)	-0.002** (0.0009)	-0.003 ^z (0.002)	0.0002 (0.001)	0.006 (0.017)
Voter Turnout	-0.008*** (0.003)	-0.0004 (0.001)	-0.008*** (0.003)	0.0003 (0.001)	-0.022 ^z (0.014)
D(Size of the voting franchise)	-0.002 (0.004)	-0.001 (0.002)	-0.001 (0.004)	0.006** (0.002)	-0.025 (0.041)
Percentage of seats won by the winning party	0.005** (0.002)	0.001 (0.001)	0.003* (0.002)	-0.0002 (0.0006)	0.047*** (0.014)
WW1	0.117** (0.052)	0.018 (0.034)	0.099 (0.064)		
WW2	0.190** (0.093)	0.121*** (0.039)	0.069 (0.079)	0.100*** (0.029)	-0.862* (0.437)
Year leading into an election	0.0002 (0.026)	-0.014 (0.010)	-0.014 (0.027)	0.00002 (0.010)	0.070 (0.221)
Log(Government Deficit)				0.091** (0.039)	-1.02** (0.437)
Constant	0.307** (0.146)	-0.030 (0.066)	0.338** (0.144)	0.079 (0.093)	0.050 (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

***(**)[*]{^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.

Table 6
Control Function Approach to 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	-1.170** (0.509)	-0.078 (0.202)	-0.980 ^z (0.680)	0.238 (0.314)	1.347 (5.712)
Residual from 1 st Stage Regression, e	0.639 (0.573)	-0.295 (0.255)	0.444 (0.765)	0.101 (0.352)	2.30 (5.88)
D(Agriculture's share of the Labour Force)	-4.573** (2.164)	-1.012 (0.963)	2.478 (2.887)	-0.884 (1.268)	3.199 (21.20)
Immigration rate	0.910 (1.221)	0.310 (0.544)	-2.125 (1.630)	1.273 (2.375)	-40.91 (39.73)
D2(Percentage of the population below 16)	-0.252** (0.126)	-0.078 (0.056)	0.044 (0.168)	-0.016 (0.050)	2.248*** (0.843)
D(Openness)	0.006 (0.004)	0.003 ^z (0.002)	0.016*** (0.006)	0.0003 (0.002)	0.015 (0.032)
Minority government	0.030 (0.041)	-0.016 (0.018)	0.002 (0.054)	-0.013 (0.016)	0.467* (0.270)
Liberal Government	0.037 (0.025)	-0.006 (0.011)	-0.058* (0.033)	-0.001 (0.013)	-0.096 (0.221)
Duration of Party Tenure across elections	-0.005** (0.002)	-0.002* (0.001)	0.005 ^z (0.003)	0.001 (0.001)	0.007 (0.019)
Voter Turnout	-0.008*** (0.002)	-0.0004 (0.001)	-0.005 ^z (0.003)	0.0005 (0.001)	-0.017 (0.015)
D(Size of the voting franchise)	-0.002 (0.004)	-0.001 (0.002)	-0.006 (0.006)	0.006** (0.003)	-0.034 (0.043)
Percentage of seats held by Incumbent	0.005*** (0.002)	0.001 ^z (0.0007)	0.003 ^z (0.002)	-0.001 (0.001)	0.044*** (0.011)
WW1	0.132** (0.055)	0.015 (0.025)	0.585*** (0.074)		
WW2	0.178*** (0.054)	0.123*** (0.025)	0.463*** (0.072)	0.115*** (0.024)	-0.821** (0.400)
Year leading into an election	-0.006 (0.025)	0.015 (0.011)	0.037 (0.033)	0.002 (0.050)	0.102 (0.167)
Log(Government Deficit)				0.100*** (0.030)	-1.000** (0.491)
Constant	0.243* (0.166)	-0.033 (0.074)	0.648*** (0.220)	0.047 (0.068)	-0.327 (1.142)
Statistics					
Observations	144	144	144	78 ^t	78 ^t
R ²	.250	.314	.559	0.652	.343
Breusch-Pagan test of independence	Chi2(3) = 25.34 Prob= 0.00			Chi2(2) = .493 Prob= .348	

***(**)[*]^{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. See also the online database in Winer (2019). 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** = $\text{LnUSiip} - \text{LnUSiip}(-1)$.

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 = term_tenure = number of years since the current parliament started.

DURATION OF PARTY TENURE = 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 lagged 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.

VOTING FRANCHISE = $\text{registered} = (\text{number of electors on voter lists} / \text{Population})$

VOTER TURNOUT = $(\text{number of voters} / \text{registered})$

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

Variable names and Descriptive Statistics

Variable name	Observations	Mean	Standard deviation	Adjusted Dickey Fuller	
				MacKinnon 5%	-2.887
				MacKinnon 1%	-3.495
Annual Data					
pc_growth	145	0.019	0.049	Level	-9.347
gov_growth	144	0.009	0.145	Level	-7.091
tax_growth	144	0.008	0.067	Level	-7.689
Inflation	145	2.52	4.57	Level	-6.583
term_tenure	145	2.58	1.34	Level	-10.649
party_tenure	145	6.66	4.85	Level	-4.497
Usiip_growth	144	4.16	9.48	Level	-12.169
deficit_growth	144	0.001	0.135	Level	-7.823
agric	145	.258	.198	Level	-1.661
	144			Difference	-9.357
imratio	145	0.010	0.009	Level	-3.364
young	144	35.21	7.85	Difference	-1.876
	143			2 nd Difference	-12.181
seats	145	58.81	8.99	Level	-4.853
Open	145	0.102	2.92	Level	-1.726
	144			Difference	-8.801
Data by Election					
registered	42	50.35	21.40	Level	-1.279
	41			Difference	-11.978
Voter turnout	42	70.66	5.24	Level	-3.148
Ave per capita growth rate over the incumbent's governing term	39	0.021	0.028	Level	-8.12
CV of per capita growth rate over incumbent's governing term	39	2.47	12.37	Level	-6.40
Average inflation rate over the incumbent's governing term	39	2.50	4.21	Level	-3.44
CV of inflation rate over the incumbent's governing term	39	2.48	3.05	Level	-7.95
Ave unemployment rate over incumbent's term	29	6.53	3.04	Level	-3.00
CV of unemployment rate over incumbent's governing term	27	0.303	0.264	Level	-2.86
Ave rate of government expenditure growth over incumbent's term	39	0.0005	0.093	Level	-10.07
Ave rate of growth of taxes over incumbent's term	39	0.0019	0.045	Level	-6.55

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