

## **Budget deficits and surpluses in the Canadian provinces: a pooled analysis**

**Geneviève Tellier\***  
**Louis M. Imbeau\*\***

**Paper presented at the annual conference of the  
European Public Choice society  
Berlin, April 2004**

Fiscal policy in Canada has been dominated, in recent years, by the successful deficit elimination policy of the federal and most provincial governments. The drop in Standard & Poor's rating of the Saskatchewan government to BBB+ in June 1992, and the subsequent difficulty the new NDP provincial government faced in finding investors to buy Saskatchewan bonds, marked the beginning of a period of fiscal austerity at both the federal and the provincial levels, that was to lead to the elimination of recurrent deficits from the budgets of most governments in Canada. Now that several provincial governments are involved in administrative reforms aimed at consolidating these results, it is timely to try to understand the dynamic of budget deficits in provincial governments.

This paper attempts to evaluate the impact of various economic, political, and institutional factors on provincial budgetary balance in Canada over the 1968-2000 period. It is divided into three parts. In part one, we describe the institutional arrangements that constrain fiscal policy at the provincial level in Canada. In part two, we show how these arrangements are manifested in budget outcomes. In part three, we present an econometric model of the determination of budget balance and we analyze the basic results of its estimation through a comparison of pooled and time series estimates. In the conclusion we argue for a revision of the theory of partisan cycles in budget deficits.

### **Institutional Arrangements**

Following the institutional rational choice approach to public policy analysis developed by Ostrom and her colleagues (Ostrom, 1986, 1990; Ostrom *et al.*, 1994), we organize our description of the institutional arrangements constraining provincial governments in Canada along three levels of institutions: the constitutional level (rules governing the legislature), the "collective choice" level (or legislative level), and the operational level.

### **Constitutional Rules**

Written in the 1860s, the Canadian constitution was viewed as an instrument to unite three British Dominions (Nova Scotia, New Brunswick, Upper and Lower Canada; the last two were to become the provinces of Ontario and Quebec) under a central government.<sup>1</sup> The Constitution provided for two levels of government: the new federal government established in a small town on the Ontario-Quebec border, and the provincial governments which were the continuation of the existing Dominion governments each with its own institutions and history. The power to tax and to spend was divided between levels of government in a specific way. The Constitution put no limit to the power of the federal government to draw taxes (art. 91-3), whereas it limited provincial governments to direct taxes (art. 92-2), to the selling of licenses and permits (art. 92-9), and to direct and indirect taxes on natural resources (art. 92-A4). As far as spending was concerned, the Constitution reserved all important matters (by nineteenth century standards!) to the federal government through its article 91 (post, census, defense, fishing, navigation, and Indian affairs) whereas it gave provinces the exclusive right to legislate in matters of «local» interest like natural resources and

---

\* School of Management, University of Ottawa

\*\* Center for the Analysis of Public Policy (CAPP) and Department of Political Science, Université Laval

<sup>1</sup>. The other provinces would join the federation after the initial agreement of 1867 in the following order: Manitoba (1870), British Columbia (1871), Prince Edward Island (1873), Saskatchewan and Alberta (1905), Newfoundland (1949).

public land, justice administration, and public prisons, health and social services (art. 92), and education (art. 93). Municipalities had no constitutional power to tax or to spend. It was the prerogative of provincial governments to create local governments and to give them taxing and spending powers.

It is not easy to get reliable data on government taxing and spending in the first years of the federation. However limited the available figures, they show that provincial governments already had important bargaining powers, despite the initial objective of the writers of the Constitution to create a strong central government. Eggleston and Kraft (quoted in Perry, 1997: 10, 21, 23) showed, for example, that total provincial revenues went from \$6.7 million in 1874 to \$316.5 million in 1937, when federal revenues evolved from \$21.6 million to \$464.3 million over the same period. Federal transfers represented 58 percent of provincial revenues in 1874, and 29 percent in 1937 (this percentage had been as low as 10 percent in 1930). Federal-provincial fiscal relations evolved in such a way that, by the end of the twentieth century, the federal government accounted for 43 percent of all public administration revenues, 38 percent of all public administration expenditures (excluding general purpose transfers), and that federal transfers accounted for 16 percent of total provincial revenues.

There is no formal instrument of federal-provincial fiscal coordination in Canada. Federal and provincial finance ministers and deputy-ministers consult each other and share information in preparing their budgets, but this informal coordination takes place in closed-door meetings from which little information leaks. Rather, the Canadian fiscal history is more one of conflict and search for accommodation than of coordination and monitoring.<sup>2</sup> As Courchene put it, “any monitoring of provincial finances is done by the capital markets (bond-rating agencies), not by Ottawa” (1999: 324). As such, because of the impact they have on the cost of government borrowing, rating agencies’ evaluations act as institutional mechanisms that constrain fiscal decisions. Here, provincial governments have a position comparable to that of sovereign states: they are rated according to their own capacity to pay interest and repay capital principal, and they make their own fiscal decisions.<sup>3</sup> Therefore, the Canadian institutional environment may be characterized as highly fragmented as far as federal-provincial fiscal relations are concerned.

On the opposite, within each province, the institutional setting is highly cohesive. Three characteristics of the political system account for this cohesion. Parliamentary institutions provide for a high degree of fusion of executive and legislative powers; the electoral system makes the occurrence of a minority government a rare outcome at elections; strict party discipline gives the premier an almost complete control over the provincial legislature. In fiscal terms, this means that the provincial premier and his finance minister may lead the game according to their preferences and to the characteristics of the fiscal situation they inherit: if the premier is more of a “spender” than a “guardian,” discipline in fiscal policy is less likely. In that respect, four provinces went through a particularly drastic program of deficit elimination in the 1990s and in all four cases, the policy was directly monitored by the premier: Romanow in Saskatchewan, Klein in Alberta, Bouchard in Quebec, and Harris in Ontario.<sup>4</sup>

## Legislative Rules

There is no balanced-budget legislation at the federal level. In 1990, a federal legislation provided that the Unemployment Insurance account be managed on a self-financing basis. The Spending Control Act of 1991, which set limits for aggregate program spending, constrained federal government expenditures from

---

<sup>2</sup>. For a review of Canadian federal fiscal relations, see Perry, 1997. For a comparison of fiscal federalism in Canada, Belgium, Germany, and Switzerland, see Braun 2004.

<sup>3</sup>. It may be argued that, in spite of its fiscal autonomy, a defaulting province would be bailed out by the federal government. In that sense, provinces are not exactly in the same position as sovereign states. The absence of monitoring works as long as there is no acute crisis. In 1992, some officials of the Saskatchewan government contemplated the possibility of defaulting on the provincial debt and of letting the federal government monitor the recovery from the fiscal crisis in which the government had found itself. For an analysis of provincial credit ratings in Canada, see Cheung, 1996. For a discussion of a potential deficit-financing bias on the part of the provinces due to the possibility of being “bailed out” by the central bank or the federal government, see Devereux, 1993; quoted in Millar, 1997: 15.

<sup>4</sup>. For an account of the Albertan experience, see Bruce, Kneebone, and McKenzie, 1997. For a comparison of government institutional interventions to control expenditures in Alberta, Saskatchewan, and British Columbia, see Imbeau, 2000.

1992 to 1996. During these years, actual expenditures met the requirements of the Spending Control Act which was not extended beyond 1996 since subsequent budgets became more restrictive than the legislation.

At the provincial level, British Columbia adopted the first provincial law limiting public spending in 1991 but it was soon repealed in 1992. Then, six provinces adopted their anti-deficit legislation: New Brunswick (1993 and 1995), Alberta (1993 and 1995), Saskatchewan (1995), Manitoba (1995), Nova Scotia (1996), and Québec (1996). The stringency of these laws varies from one province to the next. Table 1 displays the characteristics of provincial anti-deficit laws, based on Millar's analysis (Millar, 1997). Manitoba is the province where the anti-deficit law is the most stringent. It applies limits to *realized*, as opposed to *forecasted*, deficits, like Alberta's, Québec's, and New Brunswick's, but unlike Saskatchewan's and Nova Scotia's laws. It gives concrete debt elimination provisions, requires the budget to be balanced over a single-year period, gives penalties for not achieving balance and requires a referendum for tax changes. Saskatchewan has the least stringent anti-deficit law. "It requires the government after each election to prepare four-year fiscal plans in which forecasted expenditures cannot exceed revenues. Surpluses must be applied to the province's debt-reduction account. To ensure accountability, the government must present regular updates of [its] progress under the plan, identifying any unforeseen circumstances which might threaten progress" (Millar, 1997: 3).

**Table 1 - Characteristics of Provincial Anti-Deficit Legislations  
(1= Yes; 0=No)**

	Existence of anti-deficit law	Apply to realized deficits	Concrete debt elimination	Single-year budget period	Penalties for not achieving	Referendum requirement for tax	Total (Index of stringency)
Manitoba	1	1	1	1	1	1	6
Alberta	1	1	1	1	0	0	4
Québec	1	1	0	1	0	0	3
Nova Scotia	1	0	0	1	0	0	2
New Brunswick	1	1	0	0	0	0	2
Saskatchewan	1	0	0	0	0	0	1
British Columbia	0	0	0	0	0	0	0
Newfoundland	0	0	0	0	0	0	0
Ontario	0	0	0	0	0	0	0
Prince Edward Island	0	0	0	0	0	0	0

Source: Based on Millar 1997: 38.

## Operational Rules

The Canadian provinces share a similar budgetary structure composed of a set of agencies responsible for the preparation, the execution and the evaluation of the province's budgets: a Ministry of finance, a Treasury board, a Comptroller office, an Auditor, and committees of the Legislature. The agencies provide a general framework that structures the budgetary process from conception to evaluation and leave plenty of room for variation from one province to the next. Unfortunately, there is no systematic comparative analysis of the provincial budget processes that would give us an idea as to how provinces differ in terms of transparency of budget procedures, control over budget execution, and accountability of budget agents.

### Fiscal Outcomes in Canadian Governments

The distribution of government revenues among levels of government in Canada illustrates the fiscal importance of provincial governments. The federal government relies on two main revenue sources: income taxes, which accounted for 57.6 percent of total revenue, and consumption taxes, 21.1 percent in 1996-97. There is more dispersion of revenue sources at the provincial level: income taxes account for 32.5 percent of total revenues, consumption taxes for 21.9 percent, federal transfers for 15.7 percent, and interest revenues for 10.8 percent. Provincial governments are quite autonomous in terms of their revenues. Their dependence rate (ratio of federal transfers to total provincial revenues) is quite low as compared to that of federated states in other federations: 0.16 for Canada as compared to 0.39 in Australia,<sup>5</sup> and 0.22 in the United States.<sup>6</sup>

The importance of provincial governments appears even greater in public fiscal outcomes when one considers expenditures minus transfers. At 173.7 billions of dollars in 1996-97, provincial governments together spent the equivalent of 122 percent of the federal government (whose spending level was \$142.2 billion once transfers to other levels of government are subtracted). The main spending item for the federal government is social services (29 percent) closely followed by debt charges (27 percent) and public protection and security (10 percent). At the provincial level, the main spending items are health services (27 percent), education (19 percent), social services (18 percent), and debt charges (15 percent).

These two distributions of revenues and spending yielded a deficit of \$13.5 billion at the federal level, \$5.9 billion at the provincial level, and \$0.1 billion at the local level, for a combined deficit of \$19.9 billion for fiscal year 1996-97. By fiscal year 1997-98, the combined budget balance was in surplus. Figure 1 shows that the fiscal picture in Canada has not always been that positive in recent decades. From an overall surplus in 1974, the ratio of budget balance for all levels of government to total spending dropped into deficit in 1975 to become again positive only in 1996. In the meantime, the deficit/spending ratio followed economic cycles, dropping sharply after the two recessions of 1981 and 1990. The provincial ratio responded less closely to the 1981 recession than it did to the 1990 one. While federal transfers to the provinces somewhat protected provincial finances in the 1980s, their drastic cut by the federal government as part of its deficit elimination policy in the 1990s had provincial administrations to bear most of the effect of the 1990 recession.

This simple and elegant picture of the evolution of government balances in Canada over the 1968-2000 period hides however an important cross-provincial variation. Figure 2 displays this variation. It shows that until 1994, most of the provinces were in deficit. The aggregate provincial surplus shown in Figure 1 for 1968-79 was mainly driven by Alberta's colossal surpluses drawn from inflated oil prices. While Alberta was amassing its surpluses, several provincial governments were running deficits. Figure 2 also shows that by the end of the period, most of the variation had disappeared, all provinces, except New Brunswick, having budgetary surpluses. Finally, the box-plots of Figure 2 illustrate the fact that, even though median provincial fiscal balances have followed economic cycles in the 1980s and the 1990s, we must look for other explanations to account for the variation in deficits as a percentage of total spending. In the following

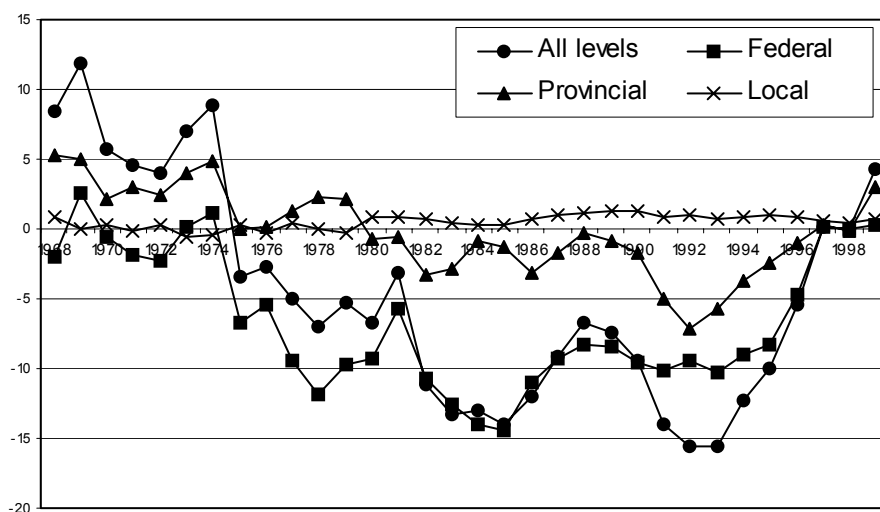
---

<sup>5</sup>. For various years between 1997 and 2000. Sources: States Treasuries for state level data, Commonwealth ministry of finance for federal level data.

<sup>6</sup>. For 1997. Source: US Department of Commerce, <http://www.census.gov/2000>.

sections we present and empirically test a model that explicitly captures the effects of both economic and political factors.

**Figure 1 - Budget Balances in Canada: 1968-2000  
(Percent of Total Spending)**



### Explaining Provincial Deficits and Surpluses

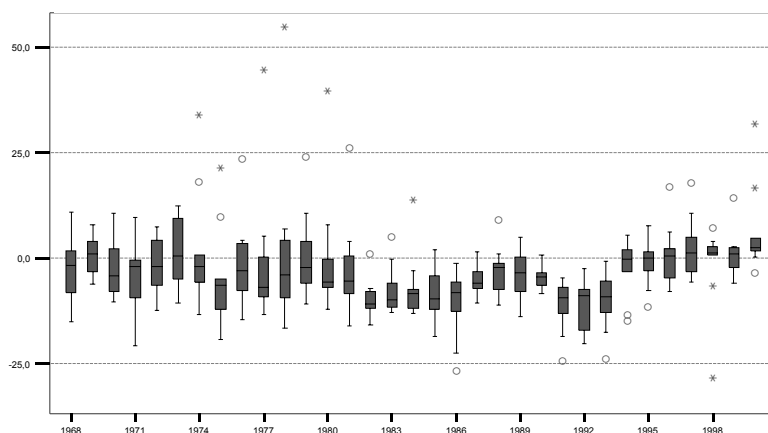
#### Dependent Variable

The empirical research on the political economy of budget deficits has generally used budget balance as a percentage of GDP as the preferred measure of government behavior regarding fiscal performance. This choice has two important advantages. First, it controls for the effect of inflation. This is particularly important in time-series data where inflation rates may account for a sizeable portion of the variance in fiscal outcomes. Second, it controls for the size of the public sector, a factor of which one must take care in cross-sectional designs.

However, this measure suffers from two important shortcomings. First, it assumes equal inflation in the public and the private sectors. Many studies have shown that this assumption is false, and that indeed the price dynamic is quite different in the public and the private sectors. Garand (1989), for example, has shown that inferences about the growth of government spending in American states are not the same whether or not one uses differential price indices for the two sectors. Imbeau *et al.* (2001) made the same demonstration for the Canadian provinces. Second, the ratio of deficit to GDP may vary without any actual change in government action. Indeed, the ratio can fluctuate with government deficit being stable in absolute terms if GDP changes. This is quite annoying for a measure of *government* behavior.

There is an alternative to the deficit/GDP ratio that corrects for these two shortcomings while preserving the advantages: deficit/total spending. This measure controls for inflation and for the size of the public sector while taking into account the two problems of different price dynamics in the public and the private sectors and of measuring only government behavior. This is why we use budget balance as a percentage of total spending (henceforth denoted *BB*) as our dependent variable. Budget balance is the simple difference between total revenues and total spending. The distribution of this variable across provinces and overtime is displayed in Figure 2.

**Figure 2 - Budget Balances in Canada: 1968-2000  
(Percent of total Spending)  
Source: Statistics Canada, CANSIM)**



## Hypotheses

### *Economic Cycles*

Positive theories of budget deficits generally start with measures of the economic cycle as explanatory factors. Consistent with both the Ricardian Equivalence theory and Keynesian theory, budget deficits are expected to co-vary with macroeconomic indicators like unemployment rates and economic growth rates. Orthodox authors would see this co-variation as an effect of a tax smoothing policy; Keynesians would interpret it as an effect of a counter-cyclical policy.<sup>7</sup> Movements in unemployment and in economic output measure important sources of stress over both government spending and revenues. But in a federal system there is an additional source of stress on provincial revenues: federal transfers to the provinces. Provincial revenues may be greatly influenced by unilateral decisions of the federal government to increase or to cut federal transfers. Economic cycles are captured by three variables:

$\Delta UR_t$ : Percent change in unemployment rate =  $100 (UR_t - UR_{t-1}) / UR_{t-1}$

$\Delta GPP_t$ : Percent change in gross provincial product =  $100 (GPP_t - GPP_{t-1}) / GPP_{t-1}$

$\Delta TRANS_t$ : Percent change in federal transfers =  $100 (TRANS_t - TRANS_{t-1}) / TRANS_{t-1}$

In addition to these economic explanations of the variation in budget deficits, the political economy literature suggests that several political factors may account for the variation in deficits.

### *Electoral Cycles*

Deficits may be the object of an electoral cycle. Since the seminal contribution by Nordhaus (1975) and the subsequent theoretical developments by rational expectation theorists (Cukierman and Meltzer, 1986; Rogoff, 1990; Rogoff and Sibert, 1988) the idea that spending and deficits should be larger (or budget balance should be lower) as an election comes closer has been tested extensively. The literature on the size of the public sector in Canadian provinces shows such a cycle to exist. The electoral cycle theory is commonly modeled as:

<sup>7</sup>. As de Haan and Sturm suggested, "both theories imply that budget deficits are counter-cyclical" (1994: 162). Barro (1979) showed that the tax-smoothing model is confirmed by data on the American federal deficit. However, Roubini and Sachs (1989) argued that this model is not confirmed by data from most industrial democracies. For a discussion of the Ricardian Equivalence theory and a review of empirical findings, see Barro, 1989. For a discussion of the Keynesian normative theory and an empirical test on the federal deficit in the United States, see Lowery, 1985.

$$BB_t = \beta_0 + \beta_1 BB_{t-1} + \beta_2 EY_t + \beta_3 PREELEC_t + \beta_4 POSTELEC_t + v_t$$

Where *EY*: Election year

*PREELEC*: Pre-election year

*POSTELEC*: Post-election year

The theory predicts that coefficients  $\beta_2$  and  $\beta_3$  are negative (deficits are higher in an election year or the year before an election), and  $\beta_4$  is positive. The value of coefficients depends on the assumption that is made about the objectives policymakers pursue. For some, policymakers manipulate fiscal policy to influence the behavior of macroeconomic variables like unemployment and economic growth. In that case, there should be a longer delay before the actual policy and the time of election, and the hypothesis should predict that  $\beta_3 < \beta_2 = 0$  in absolute terms. For others, policymakers try not to manipulate macroeconomic conditions but microeconomic choices, and therefore try to convey to voters the idea that public services have become cheaper than before.<sup>8</sup> Under this assumption,  $\beta_2 < \beta_3 = 0$ . Since there is no need to wait for eventual effect on macroeconomic conditions, the fiscal policy effect on voter's cost-benefit evaluation of government goods and services is assumed to be almost immediate. In both cases, it is assumed that fiscal policy will return to "normal" after the election. Therefore,  $\beta_4$  should be zero.

Another controversy is found in the literature on electoral cycles as to how electoral manipulation is combined with Keynesian stabilization policy or tax smoothing policy. Generally, electoral manipulation is considered to impact on deficits at the margin, that is, after stabilization or tax smoothing policies have been applied. Some contested this general view on the ground that the supposed stabilization-justified or tax-smoothing-justified deficits were in fact politically motivated. Following Lowery (1985), the general expectation of marginal impact can be assessed through a multivariate model including both economic- and electoral-cycle variables.

#### *Partisan Cycles*

Assuming that politicians are ideologues, i.e. they base their decisions on the preferences of their party or of specific electorates rather than on the general welfare, a large body of literature has developed on what has been called the partisan cycle model (Hibbs, 1977, 1992).<sup>9</sup> In its most simple form, this theory assumes that there are two types of policymakers, each supported by a separate group of voters whose interests he or she maximizes. One group supports higher public spending (the "left"), the other (the "right") prefers lower public spending. The main hypothesis deduced from this theory suggests that spending is higher in governments dominated by leftist parties and lower in governments led by the right. This hypothesis has found empirical support in models predicting government spending in OECD countries (Imbeau, Pétry, and Lamari, 2001) and in the Canadian provinces (Pétry *et al.*, 2000; Tellier, 2003). But the theory is less clear when it comes to predict budget deficits. Nothing strictly allows one to deduce that leftist government would finance their higher expenditures through deficit rather than through taxation. It is generally held that, in a context where all parties tend to finance part of their expenditures through borrowing, the higher spender (the left) will also be the higher borrower. Empirical results generally contradict this hypothesis. For example, Alesina and Perotti (1995) show that the probability of a tight fiscal policy is slightly higher with leftist governments. They also show that center parties, more than others, tend to adopt expansionary fiscal policy but that they are less successful in fiscal adjustments. Other examples are Poterba (1994) who found no difference between Republican and Democrat state governments in the way they reacted to fiscal shocks, and Dafflon and Pujol (1999) who found no relationship between the strength of rightist parties and deficits in Swiss cantons. In his literature review on this issue, Imbeau (2004) concludes that the classical hypothesis of a less fiscally responsible left is rejected in all but one empirical study. The impact of the partisan cycle will be explored through the use of a dummy variable (RGOV) equal to 1 when a rightist party (Conservative, Social Credit, or Union nationale) is in power.

<sup>8</sup>. For an extensive discussion, see Lowery (1985: 438-41) who adds the additional issue of who is politically biasing fiscal policy, the executive or the legislative branch. This last issue is not relevant in the Canadian case given the high degree of fusion of the two branches in the parliamentary institutions.

<sup>9</sup>. For a meta-analysis of empirical results dealing with the partisan cycle, see Imbeau, Pétry, and Lamari, 2001. For an evaluation of electoral and partisan cycle research, see Drazen, 2000.

### *Stringency of Rules*

Budget processes can be viewed as mechanisms through which interest groups “bargain over conflicting goals, make side-payments, and try to motivate one another to accomplish their objectives” (Wildavsky, 1975: 4). As von Hagen and Harden noted, “institutional design can promote the collective interest in various ways, by giving those participants whose individual interests coincide the most with the collective interest a dominant position in the process, by restricting choices for other participants, or by setting incentives or rules for making choices and by structuring decision-making processes, interactions and flows of information among the participants appropriately” (von Hagen and Harden 1994: 341). Consequently, institutions, i.e. formal and informal rules, may compensate for the deficit bias that fiscal illusion, political opportunism, and party ideology introduce in the budgetary process.

In general, the literature has tested this idea over two types of institutions: political and budget institutions. Concerning political institutions, researchers have tested the hypothesis relating government cohesion (or fragmentation) to deficits on the ground that, in order to resist the pressures induced by spending and deficit biases, policymakers must have a minimum of strength in the decision-making process. One important source of weakness is government fragmentation which manifests itself through divided governments, or through coalition or minority governments. In this case, the theory predicts that deficits and debts will be higher, and fiscal adjustments less successful. Empirical studies tend to confirm this prediction. Alesina and Perotti (1995), for example, showed that “in contrast with single-party governments, coalition governments are incapable of achieving a stable consolidation of the budget. They often try but systematically fail” (p. 210). Looking at a similar set of twenty OECD countries over a similar period (1960-95), Kontopoulos and Perotti (1999) showed that there is a relationship between the size of a government coalition and the importance of deficits. Roubini and Sachs (1989), Edin and Ohlsson (1991), and Alesina, Perotti, and Tavares (1998) confirmed these results, but de Haan and Sturm (1994), Hahm, Kamlet, and Mowery (1996), as well as by Dafflon and Pujol (1999), disconfirmed them.

As far as budget institutions are concerned, von Hagen and Harden (1994) showed that institutional discipline and budgetary performance are related: European countries scoring high on their structural index of rule stringency have lower expenditures, deficits, and debts. De Haan and Sturm (1994) confirmed these results on a different set of European countries. Many studies showed that the stringency of budget rules is related to lower deficits and lower debts in American states (Bohn and Inman, 1996; Alesina and Bayoumi, 1996; Bunch, 1991; von Hagen, 1991; and Poterba, 1994). Feld and Kirchgassner (1999) showed that their three indices of institutional constraints in Swiss municipalities were not significantly related to per capita public debt. Only the existence of a rule imposing a referendum on deficits is negatively related to the size of deficits: those municipalities that must have a deficit approved through referendum have lower debts. However, Dafflon and Pujol (1999) contradicted this last result when they showed that the presence of a compulsory cantonal referendum for any new public spending higher than some threshold determined by law is not significantly related to smaller deficits.

When comparing Canadian provinces, political institutions are held constant since they are similar in all provinces. Therefore one can concentrate on budget institutions. We found only one study of provincial budget institutions in Canada. Writing in 1997, Millar concluded: “So far, it is difficult to determine whether the anti-deficit constraints legislated by many of the provinces have been effective in encouraging fiscal discipline. Although the provinces that have adopted anti-deficit constraints have generally enjoyed fiscal performance in recent years, this has also been true in general for the provinces that have not adopted constraints” (Millar, 1997: 7). This conclusion is based on descriptive statistics. Recoding Millar’s analysis of provincial anti-deficit legislation as we did above, we will put the hypothesis to a systematic test through the use of an index of the stringency of anti-deficit laws (STRING), based on Millar’s analysis.

For estimation purposes, we integrated the preceding hypotheses into the following model:

$$BB_t = \beta_0 + \beta_1 BB_{t-1} + \beta_2 \Delta UR_t + \beta_3 \Delta GPP_t + \beta_4 TRANS_t + \beta_5 EY_t + \beta_6 PREELEC_t + \beta_7 POSTELEC_t + \beta_8 RGOV_t + \beta_9 STRING_t + v_t$$

Since there are rigidities in the social system that infuse inertia in fiscal policy and that make it hard for a government to eliminate a recurring deficit, especially when it is high, it is also hypothesized that the current value of the budget balance ( $BB_t$ ) will be influenced by the balance of the previous year ( $BB_{t-1}$ ).

## Data and Method

We tested our model with annual data measuring the budget balance of the ten Canadian provinces. The analysis covers the 1968-2000 period, for which complete and comparable data are available. Data measuring public budget balance and macroeconomic aggregates are drawn from Statistics Canada (respectively from its *Financial Management System — Public Sector Statistics*, and its *System of National Account — Provincial Economic Accounts Surveys*). The information used to measure electoral and partisan cycles are taken from the *Canadian Parliamentary Guide*. The stringency of rules is measured with an index based on Millar (1997). Since data measuring public deficits and expenditures are presented by Statistics Canada on a fiscal year basis (from April 1<sup>st</sup> to March 31<sup>st</sup> of the following year) all other variables were computed on the same basis, except for provincial unemployment rate before 1977, and for provincial GDP (or GPP), for which information is unavailable (the two measures are computed on a civil year basis). Operational definitions and sources for each variable are detailed in the appendix.

It must be pointed out that Statistics Canada undertook an important revision in 1997 that changed several definitions it uses to collect data. This revision had an important impact for the analysis of Canadian public expenditures over time. In fact, two series are available: one that ends in 1995 and another that starts in 1988. Statistics Canada warns users that its two series are distinct and may not be directly comparable. However, our own analyses indicate that differences between the two series are only minor when budgetary balances are studied. Consequently, the use of data belonging to one or the other series does not meaningfully change our estimates<sup>10</sup>.

A first estimation was performed using observations from the ten provinces over the 1968-2000 period. Pooling time-series cross-sectional (TSCS) data permits large-sample analysis. However assumptions of constant variance and uncorrelated error terms may not be valid with TSCS data: the residuals are often characterized by autocorrelation, panel heteroscedasticity and contemporaneous heteroscedasticity. If errors are not independent and identically distributed then ordinary least squares (OLS) will generate inefficient and/or biased estimates and produce incorrect standard errors<sup>11</sup>. Our preliminary estimates indicated an absence of autocorrelation<sup>12</sup> but revealed the presence of panel and contemporaneous heteroscedasticity<sup>13</sup>.

When heteroscedasticity is present, a feasible generalized least square (FGLS) procedure can be used (such as the well-known Park-Kmenta method which corrects simultaneously for autocorrelation, panel and contemporaneous heteroscedasticity). However, Beck and Katz (1995) have demonstrated that FGLS underestimates standard errors, thus inflating confidence intervals and statistical tests. With pool data, these authors suggested to use instead OLS to estimate the regression coefficients and a Panel-Corrected Standards Errors (PCSE) procedure to compute standard errors. In presence of heteroscedasticity, it may also be possible that cross-sectional or spatial differences be accounted for simply by allowing different intercepts. Accordingly cross-section and/or time-series dummy variables can be included in a “fixed effects model” (or least squares dummy variables model, LSDV) and estimated by OLS<sup>14</sup>. An F test can be used to determine if the fixed effect model is relevant (Greene, 2000). Therefore, we ran two distinct regressions: one in which each year is accounted for with a dummy variable and another one allowing for different intercepts for each province. In the first case, the time effect seems important (as the F test indicates), but not for the entire period. A close examination of the estimated intercepts indicates that years of severe economic turmoil (namely the years 1973-75 and 1981-82) and years of fiscal discipline at both provincial and federal levels (years 1994-1997) have a strong and distinct impact on budgetary balance

<sup>10</sup>. The same is also true for GPP and unemployment rate, two other series that undergone conceptual changes over the years.

<sup>11</sup> Heteroscedasticity will produce inefficient estimates while autocorrelation will lead to biased estimates.

<sup>12</sup> Since autocorrelation can only be uncovered after the heteroscedasticity is controlled for, a “pooled” Durbin-Watson statistic was used to detect it (Says, 1989). The Durbin-Watson statistic was computed for each cross-section and then averaged. Because our model has a lagged dependent variable among the regressors, the statistic used is the Durbin h. The test indicates that the null hypothesis of no autocorrelation cannot be rejected. It is possible that the absence of autocorrelation be explained by the inclusion of the lagged dependent variable.

<sup>13</sup> As suggested by Greene (2000) the Lagrange Multiplier test was used to test for panel heteroscedasticity, and the Breusch-Pagan Lagrange Multiplier test for contemporaneous heteroscedasticity. All statistical analyses were produced with Shazam.

<sup>14</sup> Heteroscedasticity can also be corrected with random effect models which assume that differences between units are randomly distributed. However, random effect models are appropriate when observations are unconditional, that is to say when they form a sample drawn from a large population. This is clearly not the case with our own dataset.

(results are presented in the appendix). For the second regression, the F test supports the fixed effect model when dummy variables are used to identify each cross-section units. Therefore, we decided to estimate an equation that includes a dummy variable representing the years 1973-75 and 1981-82 (Recession years), another one for the 1994-1997 period (Fiscal discipline period), and ten dummy variables for province identification. Since tests indicate the presence of heteroscedasticity even when the unit and time effects have been accounted for, PCSE are reported alongside with OLS estimates.

Our second set of estimations tests our model within each province. As Kittel (1999) pointed out, pooling implies that all units of analysis share common characteristics. Pool results provide average provincial estimations that might not mirror adequately the behavior occurring in all units. Although Canadian provinces share many similarities, we cannot know for certain if the hypothesis presented here are valid all across the country. Therefore, as suggested by Kittel, we also tested the model for each unit separately to verify if the pool findings can be replicated in each section. We were fortunate enough to have at our disposal more than 30 observations per province, a large enough sample to make statistical inference with time series data.

At first glance, OLS estimation seems appropriate when estimating the model in each province (correcting for autoregressive disturbance if necessary). However, exploratory tests indicated that errors are correlated across cross-section units. For that reason, each provincial estimation was performed with a seemingly unrelated system of equation (SUR), which takes into account cross-section correlation. Our analysis shows that results from the pooled model do not apply equally in all provinces and that individual provincial estimations shed light on the pooled estimations.

## Results

Table 1 displays both our pooled regression and provincial time series results<sup>15</sup>. We first summarize the pooled results and we then turn to the provincial time series.

The pooled model seems to fit the data fairly well. This set of explanatory factors explains 69% of the variation in budget balance as a percentage of total spending. As expected, the lagged value of the dependent variable turns out to have a significant impact.

There is a significant economic cycle. An increase of one percent in provincial GDP is significantly associated with an increase of 0.5 percentage points in budget balance. Unemployment is not significant. Federal transfers are positively related to budget balance, though its impact is relatively small: an increase of one percent in federal transfers corresponds to an increase of about 0.06 percentage points in budget balance. These results correspond to what is found in the literature. The insignificance of the unemployment rate however is surprising. The provincial time series estimates will reveal why we arrive at this result.

There is an electoral cycle in provincial deficits: budget balance is lower (deficits are higher) in pre-election and election years as compared to other years. This result is congruent with the literature which shows that there is an electoral cycle in provincial public spending in Canada. Furthermore, the coefficient of election-year is lower than that of Pre-election-year, thus supporting the hypothesis that policymakers manipulate public deficits to influence the behavior of microeconomic choices. However, the result of a Wald coefficient test on pre-election-year and election-year leads to the non rejection of the null hypothesis that the two variables are equal (result displays at the bottom of table 2). Consequently, it seems premature to discard the hypothesis that policymakers try also to manipulate public deficit to influence the behavior of macroeconomic variables.

---

<sup>15</sup> As noted in the appendix, the model specification of our pooled estimation includes fixed effects for provinces. It also includes two variables that capture the significant time fixed effects: negative in 1973-75 and 1981-82 (RECESSION YEARS) and positive in 1994-97 (FISCAL DISCIPLINE PERIOD). 1973-75 correspond to the oil crisis that dramatically increased public deficits and 1981-82 to the recession of the early eighties which had the same impact. Curiously enough, the 1990-91 recession did not show in the fixed effects. 1994-97 correspond to the period when the federal and most provincial governments eliminated their deficits through spending cuts.

We found no partisan cycle in the pooled analysis. Parties of the right do not have lower deficits than parties of the left. Actually, though not significant, the regression slope tells us that parties of the right tend to have higher deficits (negative sign). Again, our provincial time series will shed some light on this result.

Finally, the stringency of rules have a significantly positive impact on the budget balance: provinces with a more stringent anti-deficit law have significantly lower deficits.

This pooled model gives us a general law applicable to all ten provinces over the 1968-2000 period. In general, it confirms the main findings published in the political-economic literature: deficits (and debts) follow economic and electoral cycles, are sensitive to stringent rules, but do not follow the classical partisan cycle. It goes without saying that individual provincial governments do not follow exactly the pattern predicted by the pooled model. By isolating each province, a time series analysis allowed us to identify differences and to understand better our pooled results.

Provincial time series results are displayed in the last 10 columns of table 1. We now turn to their analysis.

The model does not fit the data equally well from one province to the next. The weakest fit is in Prince Edward Island ( $R^2 = .36$ ) and the best fit in Saskatchewan ( $R^2 = .81$ ). On the one hand, Prince Edward Island is the smallest province with a total population around 125000 persons (compared to 9 millions in Ontario). Its small population concentrated on a tiny island may make for a different breed of government as far as fiscal policy is concerned. On the other hand, Saskatchewan has the worst record in terms of deficit level (25% of total spending in 1991) and yet led the movement toward more fiscal discipline as soon as 1992 with its New Democratic Party government. Is this sufficient to explain a better fit in this case? We doubt it. The thing is that we cannot come up with a convincing explanation of the variation in the performance of the model from one province to the next. We are also unable to explain why the slope coefficients for the lagged dependent variable is not significant in three provinces (Prince Edward Island, Nova Scotia, and British Columbia).

The provincial reactions to the economic cycle variables show an interesting pattern, as not all provinces are sensitive to the same aspect of the cycle (unemployment, economic growth, or federal transfers) and none is sensitive to every aspect. These provincial peculiarities, which nonetheless confirm the economic cycle hypothesis, are somewhat veiled in the pooled analysis, especially concerning unemployment. Changes in unemployment rates turned out to be statistically insignificant probably because of high correlation with economic growth (ranging from 0 in PEI to  $-.84$  in Ontario). Had we stopped with the pooled model, we would have missed this important result: despite its statistical insignificance, change in unemployment rate has an important impact on the budget balance of several provinces. On the opposite, despite their statistical significance in the pooled estimates, federal transfers play a role in only four provinces. The economic cycle reveals three types of provinces with regard to the sensitivity of their budget balance: the unemployment provinces, where the budget balance is sensitive to changes in the unemployment rate (Newfoundland, New Brunswick, Ontario, and Manitoba); the economic-growth provinces, where budget balance is sensitive to changes in provincial GDP (Saskatchewan, Alberta, and British Columbia); the federal-transfer provinces, whose fiscal policy is sensitive to changes in federal transfers (Prince Edward Island, Nova Scotia, New Brunswick, and Québec).

We find the same type of variability in the results concerning the electoral cycle. Though the pooled model predicts a significant electoral cycle (governments run higher deficits in election years), the slope of the Election year variable is statistically significant in only four provinces: Newfoundland, Prince Edward Island, Nova Scotia, and New Brunswick. Moreover, the impact of the cycle is much more important in these provinces than it is predicted to be in the pooled estimates (over twice as much as the predicted level for the ten provinces). Therefore, from the results reported in table 2, we must conclude that there is no electoral cycle in six provinces. However, a closer analysis of the electoral cycle taking into account the whole cycle (Pre-election years, election years, post-election years) reveals that the electoral cycle takes on a more complex structure. Most provinces show a non significant post-election-year coefficient, as predicted by the theory. Yet, only one province shows a cycle that is more in line with a macro-economic manipulation interpretation of the cycle (the deficit in Pre-election-year is significantly bigger than that of Election-year, in Québec), whereas a micro-choice interpretation of the cycle (the deficit in Election-year is significantly bigger than that of Pre-election-year) seems to be true in three provinces (New-Brunswick, Manitoba, Saskatchewan). This closer analysis therefore confirms the presence of an electoral cycle in 7 of the provinces and no electoral cycle in Ontario, Alberta, and British Columbia. Furthermore, this analysis shows that governments in Manitoba have adopted budgets that have significantly higher surpluses in the

years preceding elections. It is the only case in Canada where fiscal discipline seems to have guided the opportunistic behavior of politicians.

Let's now turn to the partisan cycle. Our pooled estimates lead us to conclude that there is no partisan cycle in provincial deficits in Canada. We thus confirm what is becoming the strongest finding of the empirical literature on budget deficits and debts in industrialized countries as results add on. Provincial time series give us a clue as to why it is so. Table 1 shows that the coefficient for government of the right is significant in six provinces out of nine<sup>16</sup>. Four of these coefficients are positive (Prince Edward Island, Quebec, Manitoba, and British Columbia) and two are negative (Nova Scotia and Saskatchewan). In other words, parties of the right in Canada are fiscally disciplined in some provinces and undisciplined in others. Aggregating these contradictory results yields a non significant pooled coefficient. Clearly our provincial time series show that there is a partisan cycle in budget deficits in the Canadian provinces. But this cycle is not the classical one suggested in the literature (the right is fiscally disciplined). It does not either correspond to the alternative explanations that have been proposed to make sense out of the anomalies found regarding this hypothesis (the war of attrition model or the strategic use of debt model). The meaningful distinction seems not to be between parties of the left and parties of the right but on some other dimension not yet identified. We will return to this issue in the concluding section.

Finally, both the pooled estimates and the time series estimates confirm the hypothesis linking a better budget balance to more stringent rules. The coefficients are significant in all but one of the provinces with an anti-deficit law. This result confirms what analysts have observed in other settings. Budget rules can compensate the deficit bias of opportunistic and ideologist politicians, and myopic voters.

### **Discussion and conclusion**

Pooled time series cross-sectional (TSCS) designs are certainly useful in helping us reach convincing generalizations given that they bear on a relatively large number of units over a relatively long period of time. However their use can be misleading when they are not accompanied by a time series analysis of each unit. The time series analysis may be viewed as a double check whose objective is to confirm the conclusions reached through a TSCS analysis and to identify possible problems and perhaps potential solutions.

In this analysis, the comparison of pooled estimates with time series estimates has shown two things with regard to the determination of budget balances. First, the analysis of the economic cycle showed how provincial governments may follow congruent, yet different, paths. In this case, the economic cycle in budget deficits expresses itself through unemployment in some provinces, through economic growth in others, and through federal transfers in still other provinces. This distinction cannot be drawn from the pooled analysis. Only time series analyses could reveal it. Second, the analysis of the partisan cycle showed how misleading pooled results can be. Of course, we knew from the literature that this hypothesis had major conceptual problems. Had we not explore the provincial time series, we would have satisfied ourselves with the simple rejection of the partisan cycle hypothesis. We did not and we found that parties do matter but we also found that what distinguishes their view of deficits and debts does not correspond to a left/right, liberal/socialist, laissez-faire/interventionist dichotomy. And this makes sense.

Indeed, what basically separates leftist from rightist parties is their position about the size of government. The left wants more, the right wants less. Furthermore, each ideology has a preferred fiscal instrument to pursue its objective. The left wants more spending, the right wants less taxes. Thus, pursuing their objective, as we expect rational actors to do, each contributes to create a deficit: the left tries to maintain or to increase spending while avoiding the tax increases that would produce a balanced budget; the right tries to lower taxes while postponing the spending cuts that would balance the budget. Whether or not a government will adopt a fiscally responsible behavior does not depend on its preferences regarding the size of government but on something else. A spatial illustration may be useful here.

Let there be a two-dimensional budget policy space defined by taxes and spending (see figure 3)<sup>17</sup>. Each axis represents ideological positions on spending and taxing decisions, the origin corresponding to the

---

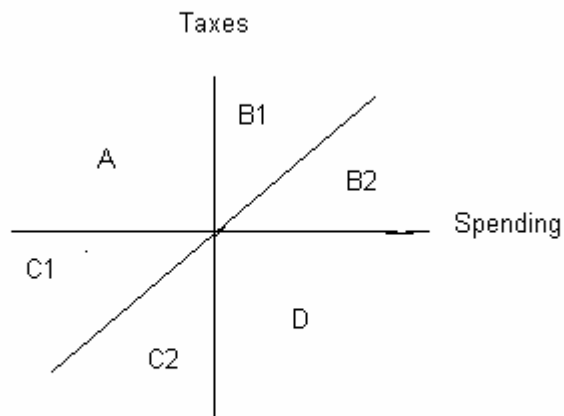
<sup>16</sup> The test is not applicable to Alberta as this province has been governed by a rightist party over the whole period.

<sup>17</sup> This development is inspired by an article by Ferejohn and Krehbiel (1987) and has been the object of a paper by Imbeau (1999).

status quo. The ideological space thus created represents multiple ideological positions relative to what a government should do regarding taxing and spending: [More spending OR Less spending] AND [More taxes OR Less taxes]. Any political party, or any individual, can be located somewhere on this space. Typically, leftist parties would be located in quadrant B ( $B1+B2$ ) and rightist parties in quadrant C ( $C1+C2$ ). Now, let's add a third dimension to this budget policy space, defined by a 45-degree diagonal representing the status quo balance as every point on the diagonal corresponds to the same difference between revenues and expenditures. Here we see that leftists can be either fiscally responsible (then they are located on, or to the north-west of, the diagonal, at  $B1$ ) or they can be fiscally irresponsible (then they are located to the south-east of the diagonal, at  $B2$ ). The same applies to parties of the right as the diagonal also split quadrant C into 2 areas, fiscally responsible ( $C1$ ) and fiscally irresponsible ( $C2$ ).

The problem with the partisan cycle hypothesis that we find in the literature is that parties located in  $B1$  are not differentiated from parties located in  $B2$ , nor are parties in  $C1$  from parties in  $C2$ , whereas this differentiation is the relevant one. For a valid test of the partisan cycle theory to be possible, parties must be gathered in two groups:  $B1 + C1$ , the fiscally responsible parties, and  $B2 + C2$ , the fiscally irresponsible ones. Applying a similar model at the individual level, Ferejohn and Krehbiel (1987) suggested that what differentiates  $B1$  persons from  $B2$  persons or  $C1$  persons from  $C2$  persons is whether or not they give priority to the bottom line, the budget balance,  $B1$  and  $C1$  persons, or to their own objective (more spending,  $B2$  persons, or less taxes,  $C2$  persons). The same applies to political parties. If we could empirically make that distinction and classify parties as fiscally responsible (from the left,  $B1$ , and from the right,  $C1$ ) and fiscally irresponsible (from the left,  $B2$ , and from the right,  $C2$ ), we would be in a position to make a valid test of the partisan cycle hypothesis in deficits and debts. Until then, we think that continuing to test the relationship between left/right party ideology and deficits is at best a waste of time, at worst an ideological undertaking disguised in scientific garments.

Figure 3: Budget policy space



**Table 1 : Regression estimates. Dependent variable : Budget balance as a percent of total spending**  
(*t* statistics in parentheses)

	<b>POOL<sup>1</sup></b>	<b>NFLD</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>	<b>QUE</b>	<b>ONT</b>	<b>MAN</b>	<b>SASK</b>	<b>ALB</b>	<b>BC</b>
<b>Constant</b>	-6.527 (-5.13)***	1.175 (0.51)	-0.530 (-0.21)	-3.197 (-2.34)**	-3.514 (-2.53)**	-8.717 (-4.95)***	-2.280 (-1.13)	-6.790 (-3.35)**	-3.720 (-1.65)*	-2.548 (-0.60)	-8.840 (-3.01)***
<b>Budgetary balance<sub>t-1</sub></b>	0.611 (11.14)***	0.639 (5.15)***	0.254 (1.82)	0.058 (0.57)	0.243 (1.94)*	0.323 (2.68)***	0.781 (8.27)***	0.461 (4.61)***	0.178 (1.57)	0.563 (5.92)***	0.137 (1.08)
<b>% ch in UR<sub>t</sub></b>	-0.022 (-1.34)	-0.141 (-2.07)**	0.004 (0.22)	-0.103 (-2.61)***	-0.137 (-2.85)***	-0.050 (-1.48)	-0.160 (-4.73)***	-0.049 (-1.60)	0.023 (0.52)	-0.068 (-0.97)	-0.031 (-0.57)
<b>% ch in GDP<sub>t</sub></b>	0.540 (7.59)***	-0.005 (-0.04)	0.027 (0.23)	-0.001 (-0.01)	0.027 (0.27)	0.237 (2.32)**	0.010 (0.05)	0.079 (0.66)	0.606 (4.63)***	0.975 (4.38)***	0.776 (3.53)***
<b>% ch in Transfers<sub>t</sub></b>	0.065 (2.41)**	0.032 (0.45)	0.174 (2.33)**	0.211 (3.67)***	0.145 (2.71)***	0.106 (4.13)***	0.032 (0.73)	0.115 (2.26)**	-0.019 (-0.58)	0.004 (0.03)	-0.066 (-1.01)
<b>Recession years</b>	-5.407 (-5.48)***										
<b>Fiscal discipline period</b>	4.454 (4.28)***										
<b>Election year<sub>t</sub></b>	-2.052 (-2.34)**	-4.848 (-2.44)**	-6.290 (-3.00)***	-5.459 (-4.59)***	-5.433 (-4.12)***	0.467 (0.52)	-0.868 (-0.60)	0.707 (0.51)	-3.098 (-1.61)	-7.276 (-1.46)	-1.429 (-0.57)
<b>Pre-election years<sub>t</sub></b>	-1.006 (-1.12)	-2.37 (-1.16)	-3.73 (-1.64)*	-4.476 (-3.74)***	-0.163 (-0.12)	-1.556 (-1.75)*	0.347 (0.24)	3.93 (2.84)***	2.339 (1.22)	-6.686 (-1.44)	0.661 (0.26)
<b>Post-election years<sub>t</sub></b>	0.312 (0.36)	0.051 (0.03)	-6.665 (-3.28)***	-3.520 (-2.90)***	0.408 (0.30)	1.104 (1.26)	-0.539 (-0.36)	1.089 (0.74)	1.854 (0.97)	-6.195 (-1.26)	0.621 (0.25)
<b>Right-wing government<sub>t</sub></b>	-0.900 (-1.48)	-1.934 (-1.21)	2.799 (2.13)**	-3.573 (-3.71)***	-1.174 (-1.07)	4.200 (2.93)***	1.371 (1.03)	2.64 (2.35)**	-8.977 (-4.86)***		3.850 (2.08)**
<b>Stringency<sub>t</sub></b>	0.806 (2.44)**			5.131 (6.55)***	1.605 (2.37)**	1.871 (4.56)***		0.717 (2.55)***	5.914 (2.57)***	2.084 (2.03)**	
<b>R<sup>2</sup></b>	0.6942	0.6129	0.3620	0.7785	0.5188	0.7552	0.7173	0.6702	0.8062	0.7827	0.4494
<b>N</b>	330	33	33	33	33	33	33	33	33	33	33
<b>Tests<sup>2</sup></b>											
<b>Pre-election = election year?</b>	Cannot reject	Cannot reject	Cannot reject	Cannot reject	Reject ***	Reject **	Cannot reject	Reject **	Reject ***	Cannot reject	Cannot reject
<b>Election = post-election year?</b>	Reject ***	Reject ***	Cannot reject	Reject *	Reject ***	Cannot reject	Cannot reject	Cannot reject	Reject **	Cannot reject	Cannot reject
<b>Pre- = post-election year?</b>	Cannot reject	Cannot reject	Cannot reject	Cannot reject	Cannot reject	Reject ***	Cannot reject	Reject **	Cannot reject	Cannot reject	Cannot reject

<sup>1</sup> The pooled specification includes fixed effects for provinces. For details and the value of coefficients, see appendix. <sup>2</sup> Wald tests for null hypothesis that the two coefficients are equal. \*\*\* p-value < 0.01; \*\* p-value < 0.05; \* p-value < 0.10.

## Appendix A: Preliminary Model with Time fixed effects

	Coeff.	T stat	Sig.
<b>Budgetary balance<sub>t-1</sub></b>	0.702	14.67	***
<b>% ch in UR<sub>t</sub></b>	-0.001	-0.03	
<b>% ch in GDP<sub>t</sub></b>	0.585	5.96	***
<b>% ch in Transfers<sub>t</sub></b>	0.098	3.33	***
<b>Pre-election years<sub>t</sub></b>	-1.228	-1.42	
<b>Election year<sub>t</sub></b>	-2.033	-2.32	**
<b>Pre-election years<sub>t</sub></b>	-1.228	-1.42	
<b>Post-election years<sub>t</sub></b>	0.326	0.38	
<b>Right-wing government<sub>t</sub></b>	0.345	0.57	
<b>Stringency<sub>t</sub></b>	0.459	1.36	
1969	-0.002	0.00	
1970	-3.239	-1.31	
1971	-3.857	-1.62	
1972	-0.550	-0.23	
1973	-5.461	-2.14	**
1974	-7.858	-3.14	***
1975	-9.075	-3.79	***
1976	-3.930	-1.60	
1977	0.081	0.03	
1978	-0.182	-0.08	
1979	-5.091	-2.10	**
1980	-1.756	-0.74	
1981	-8.177	-3.30	***
1982	-7.029	-3.01	***
1983	-2.614	-1.09	
1984	-1.958	-0.82	
1985	-1.573	-0.65	
1986	-2.508	-1.06	
1987	2.248	0.93	
1988	0.160	0.07	
1989	-0.252	-0.11	
1990	0.899	0.37	
1991	-3.715	-1.51	
1992	0.318	0.13	
1993	1.222	0.49	
1994	6.137	2.47	**
1995	3.934	1.59	
1996	5.379	2.09	**
1997	4.270	1.67	*
1998	-1.801	-0.71	
1999	2.371	0.94	
2000	4.602	1.86	*
CONSTANT	-5.152	-2.46	***
N	330		
R2	0.7108		

1968 is the reference year. \*\*\*p-value <0.01; \*\*p-value<0.05; \*p-value<0.01

**Appendix B: Province fixed effects.**

	Coefficients	t-statistics	Sig.
Newfoundland	0.480	0.55	
Prince Edward Island	1.505	1.30	
Nova Scotia	0.360	0.39	
New Brunswick	0.642	0.72	
Quebec	-0.390	-0.45	
Manitoba	0.969	0.94	
Saskatchewan	3.025	3.025	**
Alberta	5.261	5.261	***
British Columbia	2.230	2.230	*

Ontario is the reference group. \*\*\*p-value <0.01; \*\*p-value<0.05; \*p-value<0.01

### Appendix C: Variable Definitions and Data Sources

VARIABLE	OPERATIONALIZATION	SOURCES
BB <sub>t</sub>	Budget balance of Provincial General Government: $\frac{\text{Revenues}_t - \text{Spending}_t}{\text{Spending}_t} \times 100$	Statistics Canada, Public Sector Statistics, Financial Management System, catalogue n° 68-512 for years 1967-1988, and n° 68213 (also CANSIM II, table 3850002) for years 1988-2000
ΔUR <sub>t</sub>	Rate of Unemployment (UR), annual variation in %: $\frac{\text{UR}_t - \text{UR}_{t-1}}{\text{UR}_{t-1}} \times 100$	Statistics Canada, Provincial Economic Accounts, System of National Account, catalogue n° 13-213 for years 1968-1977, and Labour Force Survey, catalogue n° 70-001 (CANSIM II, table 2820087) for years 1977-2000
ΔGDP <sub>t</sub>	Provincial Gross Domestic Product (GDP), at market prices, annual variation in %: $\frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}} \times 100$	Statistics Canada, Provincial Economic Accounts, System of National Account, catalogue n° 13-213 (CANSIM II, table 3840015 for years 1967-1988, and table 3840002 for years 1988-2000)
ΔTRANS	Federal transfers to the provincial government, annual variation in %.	Statistics Canada, Provincial Economic Accounts, System of National Account, catalogue n° 13-213.
EY <sub>t</sub>	Election year: = 1 if an election occurred during the current year (t), and 0 otherwise	Canadian Parliamentary Guide (various years)
PREELEC <sub>t</sub>	Pre-election year: = 1 if an election occurred during the following year (t+1), and 0 otherwise	
POSTELEC <sub>t-1</sub>	Post-election year: = 1 if an election occurred during the preceding year (t-1), and 0 otherwise	
RGOV <sub>t</sub>	Right-Wing Government: = 1 if a Conservative or a Social Credit government is in power (during an election year, the government is the political party that stayed in office for more than 6 months)	
STRINGENCY <sub>t-1</sub>	Stringency of provincial anti-deficit legislation (see table 1 above)	Millar (1997)

## References

- Alesina, Alberto, and Roberto Perotti. "Fiscal Expansions and Adjustments in OECD Countries." *Economic Policy*, no. 21 (1995): 207–48.
- Alesina, Alberto, and Tamim Bayoumi. "The Costs and Benefits of Fiscal Rules: Evidence from U.S. States." NBER, 1996.
- Alesina, Alberto, Roberto Perotti, and José Tavares. "The Political Economy of Fiscal Adjustments." *Brookings Papers on Economic Activity*, no. 1 (1998): 197–266.
- Barro, Robert J. "On the Determination of the Public Debt." *The Journal of Political Economy* 87, no. 5 (1979): 940–71.
- . "The Ricardian Approach to Budget Deficits." *The Journal of Economic Perspectives* 3, no. 2 (1989): 37–54.
- Beck, Nathaniel, and Jonathan Katz. "What to Do (and Not to Do) with Time-Series-Cross-Section Data in Comparative Politics." *American Political Science Review* 89 (1995): 654–47.
- Bohn, Henning, and Robert P. Inman. "Balanced Budget Rules and Public Deficits: Evidence from the U.S. States." 1–54: NBER, 1996.
- Bruce, Christopher, Ronald D. Kneebone, and Kenneth J. McKenzie, eds. *A Government Reinvented: A Study of Alberta's Deficit Elimination Program*. Toronto: Oxford University Press, 1997.
- Bunch, Beverly S. "The Effects of Constitutional Debt Limits on State Governments' Use of Public Authorities." *Public Choice* 68 (1991): 57–69.
- Carmignani, Fabrizio. "The Representation of the Political System in the Political-Economy Literature: A Critical Survey." *RISEC: International Review of Economics and Business* 47, no. 3 (2000): 353–90.
- Chandler, William M. "Canadian Socialism and Policy Impact: Contagion from the Left?" *Canadian Journal of Political Science* 10, no. 4 (1977): 755–80.
- Cheung, Stella. "Provincial Credit Rating in Canada: An Ordered Probit Analysis." 38. Ottawa: Bank of Canada, 1996.
- Courchene, Thomas J. "Subnational Budgetary and Stabilization Policies in Canada and Australia." In *Fiscal Institutions and Fiscal Performance*, edited by James M. Poterba and Jürgen von Hagen, 301–48. Chicago and London: The University of Chicago Press, 1999.
- Cukierman, Alex, and Allan H. Meltzer. "A Political Theory of Government Debt and Deficits in a Neo-Ricardian Framework." *American Economic Review* 79, no. 4 (1989): 713–32.
- Dafflon, Bernard, and Francesc Pujol. "Fiscal Preferences and Fiscal Performance: Swiss Cantonal Evidence." Paper presented at the 11th Annual Conference on Public Budgeting and Financial Management, Washington, October 8, 1999.
- De Haan, Jakob, and Jan-Egbert Sturm. "Political and Institutional Determinants of Fiscal Policy in the European Community." *Public Choice* 80, no. 1–2 (1994): 157–72.
- Drazen, Allan. *Political Economy in Macroeconomics*. Princeton: Princeton University Press, 2000.
- Edin, Per-Anders, and Henry Ohlsson. "Political Determinants of Budget Deficits: Coalition Effects Versus Minority Effects." *European Economic Review* 35, no. 8 (1991): 1597–603.
- Feld, Lars P., and Gebhard Kirchgässner. "Public Debt and Budgetary Procedures: Top Down or Bottom Up? Some Evidence from Swiss Municipalities." In *Fiscal Institutions and Fiscal Performance*, edited by James M. Poterba and Jürgen von Hagen, 151–79. Chicago and London: The University of Chicago Press, 1999.
- Ferejohn, J., and K. Krehbiel. 1987. «The Budget Process and the Size of the Budget». *American Journal of Political Science* 31:296-320.
- Franzese, Robert J. "Electoral and Partisan Manipulation of Public Debt in Developed Democracies, 1956-1990." In *Institutions, Politics and Fiscal Policy*, edited by Rolf Strauch and Jürgen Von Hagen. New York: Kluwer Academic Publisher, 1999.
- Garand, James C. "Measuring Government Size in the American States: Implications for Testing Models of Government Growth." *Social Science Quarterly* 70, no. 2 (1989): 487–96.
- Greene, William H. *Econometric Analysis*. 4th ed. Upper Saddle River (NJ): Prentice-Hall, 2000.
- Hahn, Sung D., Mark S. Kamlet, and David C. Mowery. "The Political Economy of Deficit Spending in Nine Industrialized Parliamentary Democracies." *Comparative Political Studies* 29, no. 1 (1996): 52–77.
- Hibbs, Douglas A. Jr. "Partisan Theory after Fifteen Years." *European Journal of Political Economy* 8 (1992): 361–73.
- . "Political Parties and Macroeconomic Policy." *American Political Science Review* 71, no. 4 (1977): 1467–87.
- Imbeau, Louis M., François Pétry, Jean Crête, Michel Clavet, and Geneviève Tellier. "Measuring Government Growth in the Canadian Provinces: Decomposing Real Growth and Deflator Effects." *Canadian Public Policy* 27, no. 1 (2001): 39–52.
- Imbeau, Louis M. "Guardians and Advocates of Deficit Elimination: Government Intervention in the Budgetary Process in Three Canadian Provinces." In *Canada Observed: Perspectives from Abroad and from Within*, edited by Jürgen Kleist and Shawn Huffman, 145–56. New York: Peter Lang, 2000.
- Imbeau, Louis M., François Pétry, and Moktar Lamari. "Left-Right Party Ideology and Public Policy: A Meta-Analysis." *European Journal of Political Research* 40, no. 1 (2001): 1–29.

- Imbeau, Louis M., and Kina Chenard. "The Political-Economy of Public Deficits: A Review Essay." Paper presented at the European Public Choice Society, Belgirate, Italy, April 2002, 2002.
- Kittel, Bernhard. "Sense and Sensitivity in Pooled Analysis of Political Data." *European Journal of Political Research* 35 (1999): 225-53.
- Kontopoulos, Yianios, and Roberto Perotti. "Government Fragmentation and Fiscal Policy Outcomes: Evidence from OECD Countries." In *Fiscal Institutions and Fiscal Performance*, edited by James M. Poterba and Jürgen von Hagen, 81–102. Chicago and London: The University of Chicago Press, 1999.
- Lowery, David. "The Keynesian and Political Determinants of Unbalanced Budgets: U.S. Fiscal Policy from Eisenhower to Reagan." *American Journal of Political Science* 29, no. 3 (1985): 428–60.
- Millar, Jonathan. "The Effects of Budget Rules on Fiscal Performance and Macroeconomic Stabilization." Bank of Canada, 1997.
- Nordhaus, William D. "The Political Business Cycle." *The Review of Economic Studies* 42, no. 2 (1975): 169–90.
- Ostrom, Elinor. "A Method of Institutional Analysis." In *Guidance, Control and Evaluation in the Public Sector*, edited by F.X. Kaufmann, G. Majone and E. Ostrom. Berlin: deGruyter, 1986.
- . *Governing the Commons*. Cambridge: Cambridge University Press, 1990.
- Ostrom, Elinor, Roy Gardner, and James Walder. *Rules, Games, and Common Pool Resources*. Ann Arbor: University of Michigan Press, 1994.
- Perry, David B. *Financing the Canadian Federation, 1867-1995 : Setting the Stage for Change, Canadian Tax Papers ; No. 102*. Toronto: Canadian Tax Foundation, 1997.
- Persson, Torsten, and Lars E.O. Svensson. "Why a Stubborn Conservative Would Run a Deficit: Policy with Time-Inconsistent Preferences." *Quarterly Journal of Economics* 104, no. 2 (1989): 325–45.
- Pétry, François, Louis M. Imbeau, Jean Crête, and Michel Clavet. "Explaining the Evolution of Government Size in the Canadian Provinces." *Public Finance Review* 28, no. 1 (2000): 26–47.
- Poterba, James M. "State Responses to Fiscal Crises: The Effects of Budgetary Institutions and Politics." *Journal of Political Economy* 102, no. 3 (1994): 799–821.
- Rogoff, Kenneth, and Anne Sibert. "Elections and Macroeconomic Policy Cycles." *Review of Economic Studies* 55, no. 1 (1988): 1–16.
- Rogoff, Kenneth. "Equilibrium Political Budget Cycles." *The American Economic Review* 80, no. 1 (1990): 21–36.
- Roubini, Nouriel, and Jeffrey Sachs. "Political and Economic Determinants of Budget Deficits in the Industrial Democracies." *European Economic Review* 33, no. 5 (1989): 903–38.
- Sayrs, L.W. *Pooled time series analysis*. Newbury Park: Sage Publications, 1989.
- Tellier, Geneviève. "An Empirical Study of Politico-Economic Interactions in Canada." Paper presented at the Annual Meeting of the European Public Choice Society, Aarhus (Denmark), April 25-28, 2003.
- Von Hagen, Jürgen. "A Note on the Empirical Effectiveness of Formal Fiscal Restraints." *Journal of Public Economics* 44, no. 2 (1991): 199–210.
- Von Hagen, Jürgen, and Ian J. Harden. "National Budget Processes and Fiscal Performance." *European Economy* 3 (1994): 311–418.
- Whistler, Diana, Kenneth J. White, Donna Wong, and David Bates. *Shazam, the Econometric Computer Program, Version 9, User's Reference Manual*. Vancouver: Northwest Econometrics, 2001.
- Wildavsky, Aaron. *Budgeting: A Comparative Theory of Budgetary Processes*. Boston/Toronto: Little, Brown & Company, 1975.