Budget priorities in an aging society:
provincial public finances in a context of rising health care expenditures.

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Abstract.

Canadian provinces' public finances are facing serious fiscal pressures. On the one hand, aging and cost inflation are constantly increasing overall health expenditures while on the other hand, provinces are vulnerable to fiscal pressures resulting from insufficient federal transfers and by the volatility of natural resource royalties. Which type of expenditures are prioritized and which ones are likely to be cutback when governments are facing the fiscal pressures resulting from rising health-care spending and revenue constraints? This chapter does a quantitative analysis of fiscal policy choices in the ten Canadian provinces from 1980 to 2015 using compositional dependent variable analysis, a method specifically designed to analyze the impact of an exogenous variable on expenditure composition. Then, the article follows with classical time series cross sectional analysis to model the impact of changes in the composition of expenditures on income inequality. The study reveals that when provincial revenues are diminished, the proportion of health care expenditures increases, while core government expenditures are retrenched. Core expenditures include the justice system, public safety, the bureaucracy, culture, economic affairs and environmental protection. This finding contributes to a reflection about the future of Canadian federalism: as provinces are facing rising health care expenditures, their capacity to deliver policies in other areas than education and health could be impeded. However, the chapter finds that diminishing core expenditures do not increase income inequality, in fact, higher health care expenditure is associated with more redistribution.

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This is the fourth chapter of a dissertation on the political economy of public finance analyzing governments' reaction to the fiscal pressures emanating from contrasting pressures on expenditures and revenues. Despite calls for retrenchment of the welfare state, social expenditures are constantly increasing to respond to aging and new social risks, while tax competition, capital mobility and a public perception of tax fatigue constrain the revenue-generating capacity of certain taxes (see chapters 1 and 7). This paper addresses the main questions structuring this dissertation: what is the impact of fiscal pressures on public policy choices? Do they reinforce governments' tendency to prioritize short-term oriented expenditures to the detriment of policies beneficial in the long term? The previous chapter conducted a large N cross-country analysis of the impact of fiscal consolidations (i.e. austerity) on budget compositions. It found that health care and pension expenditures' share of budgets rise when governments implement fiscal consolidations, while long-term investments in infrastructure decreases. This paper builds on the previous chapter by analyzing another type of fiscal pressures, revenue shortages, in a different setup, Canadian provinces. The objective is to discover what expenditures are prioritized when governments face an exogenous revenue constraint and what expenditures are likely to be crowded out by rising health care spending.

This chapter's quantitative analyses of the composition of budget reveal that "core" government expenditures are retrenched when provinces face revenue shortages. Core government expenditures comprise the legal-rational functions of the state like the bureaucracy, the justice system, economic affairs and law enforcement, but also some more "post-modern" functions, like culture, environmental protection and immigrant integration. I argue that they are crowded out because they are less popular and visible policies than health, education and social transfers, the other main categories of provincial budgets. The crowding out of core state functions matters in the context of Canadian federalism: as provinces face rising health care expenditures, their capacity to implement policies in other areas than education and health could be impeded. As provinces cannot respond to the public's needs, the federal government might use its spending power to implement policies in areas of provincial jurisdiction, leading to considerations about provinces' autonomy in the federation.

This chapter then addresses a second question: does expenditure composition matter for income inequality? Does the prioritization of health care crowds out policies necessary to diminish inequality? As a second step, this chapter analyzes the impact of expenditure composition on income distribution. It shows that rising health-care spending and diminishing core expenditures are associated

with more redistribution, suggesting that the tendencies observed in this study have not significantly contributed to inequality.

Studying the Canadian context is pertinent for many reasons. Firstly, Canadian provinces are a case of rapidly rising health care expenditures that are gradually taking astronomical proportion of province's budgets. Analyzing the impact of fiscal pressures on expenditure composition in the past in provinces with varying levels of health care expenditures is certainly useful to understand the underlying dynamics of public budgets and predict which expenditures are likely to get crowded out in the future. The context of multi-level governance in the Canadian federation is also pertinent to evaluate the impact of fiscal pressures on the balance of power between levels of government. Moreover, the Canadian case is useful to model the impact of exogenous revenue constraints that do not derive from a government's own decisions. In the Canadian case, a diminution of intergovernmental transfers or of natural resource royalties in resource-dependent provinces put fiscal pressures on provincial governments, forcing them to reveal their priorities. Finally, comparing provinces involves a most similar research design and reduces the number of variables that could bias the relationships between countries, when studying either income distribution or budget compositions.

This chapter starts by a synthesis of the theoretical expectations developed in previous chapters about the factors explaining which type of expenditures is likely to be prioritized by governments when they face fiscal pressures. The second section discusses the context of rising health-care spending in the Canadian federation and the impact it has on fiscal federalism. The third section describes the data and presents the compositional dependent variable analysis of provincial budgets from 1980 to 2015, while the fourth section proceeds to the analysis of exogenous revenues cuts on budget compositions. The fifth section analyze the impact of expenditure composition on income distribution, while the final section concludes.

1. Theory and hypotheses: policy feedback and intertemporal trade-offs

Provinces' expenditures can be divided into five categories: health care, social spending, education, infrastructure and core government expenditures. In this section, I develop the theoretical considerations explaining why health care should be the most resistant policy to cutbacks, while core government expenditures should be the least resilient. As argued thorough this dissertation, two main factors determine which type of expenditure are prioritized when governments have to manage fiscal pressures: the degree of intertemporal trade-off and the relative popularity of a program. I argue that a public policy will be more resilient to fiscal pressures when it offers concentrated and visible benefits to sizeable constituents and when it has a low degree of inter-temporal trade-offs.

Policies create feedback effects: broad-based programs become popular and interest groups are formed to defend the policies from which they are the beneficiaries, which create path dependencies in welfare states (Pierson 1993). Theoretically, the positive feedback should be strongest when the policy coverage is universal (Jordan 2013; Laenen 2019), when the policy does not create a strong demarcation of beneficiaries based on stigmatizing deservingness criteria (Larsen 2008; Roosma 2017) and when it covers risks that are shared by different groups of the population (Jensen 2014; Rehm 2016). Accordingly, positive feedback effects should be particularly strong for health care, which covers a life cycle risk shared by citizens of all classes and incomes (Jensen 2014)[1]. Policies covering such life cycle risks tend to benefit from broad popular support, in contrast to policies covering risks affecting smaller shares of the population, like unemployment benefits[2] (Rehm et al. 2012; Rehm 2016). In the Canadian case, social spending is often means tested and targeted on the poor, which should reduce the strength of their positive feedback and their overall public support (Brady and Bostic 2015; Jordan 2013; Jacques and Noël 2018). Still, the insecurities caused by globalization increase demand for compensation by social transfers (Garrett, 1998; Autor et al. 2013; Colantone and Stanig 2017).

Garritzman, Busemeyer and Neimanns (2018) show that in a knowledge economy, globalization increases public demand for human capital investment in education even more than it

[1] While poor people are more likely to be ill than rich people, every citizen needs health care at some point in their life, especially as they get older

[2] The risk of unemployment varies across the income distribution and is affected by economic and institutional factors at the country level. Rehm and colleagues (2012) argue that the more unemployment risk is spread over the income distribution and is not correlated with income, the higher the support for unemployment insurance is.

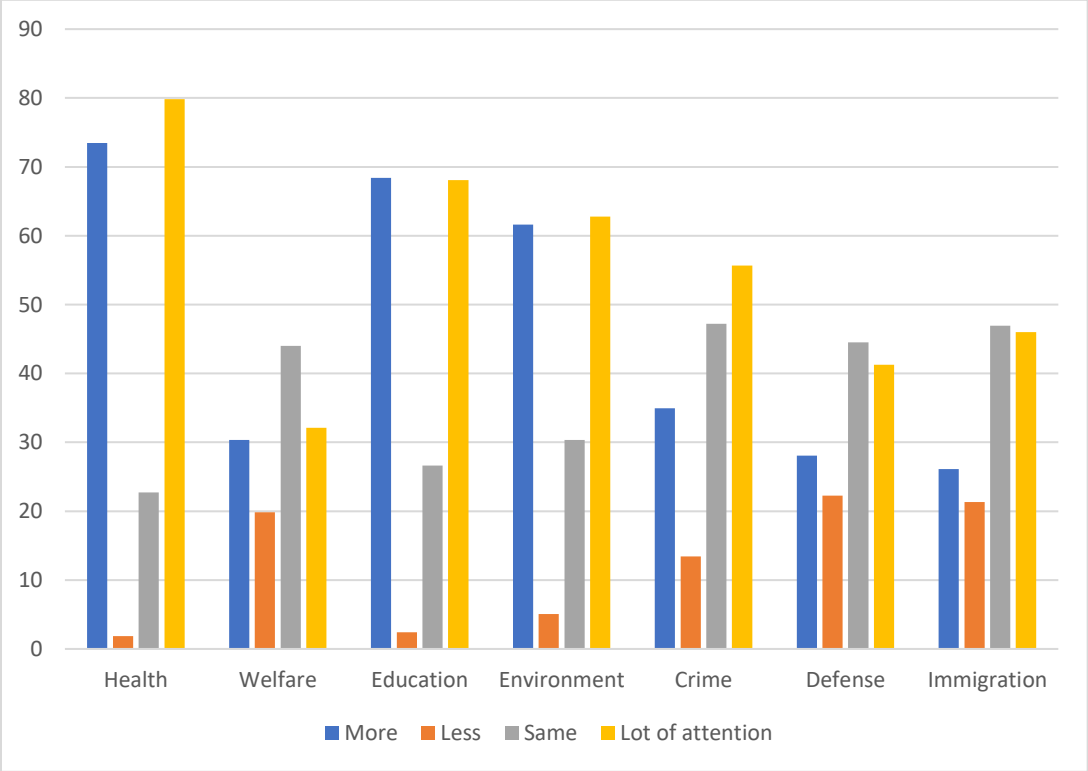
does for social transfers. Moreover, the constituencies supportive of education investments tend to have relatively high incomes and to be influential in the political sphere (Garritzman et al. 2018. Busemeyer and Garritzman 2018). In fact, education is a typical crowd pleaser and few parties propose to reduce education spending. At least 30% of households in OECD countries have at least one child below 18-year-old living with them at home (see chapter 7) and a significant proportion of the workforce depends on public funding to the education sector as students, teachers or staff. In fact, both human capital investments in education, as well as health care and social spending all have strong, albeit different, constituencies of support (Hausserman 2010). It is thus likely that when government have to choose which expenditure to retrench, they try to spare health, education and social transfers and aim for cutbacks in other areas of state activity.

Castles (2007) pointed out that political economists left out what he labelled "core government expenditures", even if they include crucial functions of governments. As a concept, core expenditures represent the basic functions of the state: a bureaucracy to administer the state, the police force, the military and the courts. Core expenditures also include culture and environmental protection, but these two "post-material" state functions represent only about 10% of core government expenditures (OECD 2019). I hypothesize that core expenditures should be crowed out by fiscal pressures as they are less visible and should thus be less strongly supported by the public than health, education and social transfers. If we believe that governments are responsive to public opinion and aim preserve the most popular types of spending even when they face revenue shortages or consolidate their budgets, it is fairly possible that core expenditures may be the least resilient function of government.

Figure 1 uses the Canadian Election Study of 2015 to present the public's preferences for additional spending on different types of expenditures. The yellow bar also shows the percentage of respondent who pay "a lot of attention" to each type of issue. There is overwhelming support for more education and health care spending; very few respondents demand less spending on these issues and large majorities of respondents mention they are paying a lot of attention to health and education. The percentage of respondents supporting additional spending on crime and justice as well as defence and immigration, issues related to core government functions, is not particularly high relative to respondents who want less or the same level of spending on these issues. Welfare gathers the lowest level of public attention and is also not particularly well supported by the public. However, the term welfare has pejorative connotations for many (notably because it evokes means testing and targeting

on the poor) and does not describe well what social spending really is. Still, it reveals that social transfers, at least those considered as "welfare", are not particularly popular in Canada[3]. Environment is the only type of expenditure in the "core" category that gathers a lot of attention from almost two thirds of respondents, but the politics of environment is more about the imposition of costs and about regulation than about spending per se. Clearly, health and education receive overwhelming public support and they are likely to be resilient to fiscal pressures.

Figure 1. Preferences for public spending on different types of expenditures and attention to each issue, Canadian election study, 2015



Another important factor to predict government policy choices under fiscal pressures is the degree of intertemporal trade-off of a policy: some policies should be less resilient to fiscal pressures because they are subject to an intertemporal trade-off, as they involve exchanging short-term pain for long-term gains. A retrospective voting dynamic and a time inconsistency problem make it more difficult to prioritize policies that are discounting discounting present benefits. Psychologically, individuals have a general tendency to prefer short-term rewards even if future benefits can be larger

[3] For example, cash transfers to famillies, or child care services, should be considerably more popular than social assistance, althought the three policies are included in social spending more broadly defined.

(Wang 2018).[4] The retrospective voting framework suggests that voters reward politicians for decisions taken in the recent years (or months) before an election (Fiorina 1975). Even if voters genuinely care about the future, they have little information on which to judge the impact of public policies on their own future welfare, whereas they can readily observe what happened in the past. Hence, evaluating the past policy decisions of an incumbent rather than the future impact of her decisions are rational shortcuts for citizens to choose which candidate to vote for (Fiorina 1975; Jacobs 2016).[5] Logically, if the retrospective voting framework predicts voting behavior, voters should reward politicians who increase current consumption and minimize levels of taxes before an election and punish those who focus on future-oriented investment because it involves either higher taxes or lower consumption in the present (Drazen and Eslava 2010; Gupta et al. 2015). Moreover, policies subject to intertemporal trade-offs suffer from a time inconsistency problem: a government cannot be certain to reap long term investments' benefits since it could be voted out of office before the benefits of a long-term investment materializes (Jacobs 2011; 2016; Weistanner 2017).

Thus, in theory, the policies whose benefits are allocated in the long term, like education and infrastructure spending, should be more likely to be cutback when government need to make difficult budgetary choices. In contrast, health care and social spending offer direct and short-term benefits to constituents and do not suffer from intertemporal trade-offs. However, as discussed, education policies benefit from overwhelming public support, which should make them resilient to fiscal pressures, even if they involve intertemporal trade-offs. This theoretical perspective suggests that infrastructure investments should be the least resilient policies to fiscal pressures because they are not particularly popular and are characterized by an intertemporal trade-off.

While chapter 3 found that infrastructure spending was the most vulnerable type of public expenditures to fiscal consolidations, it is likely that infrastructure spending would be more resilient to cutbacks in Canada than in other contexts. Firstly, electoral systems in Canadian provinces are single member districts. In such an electoral system, governments have incentives to use infrastructure

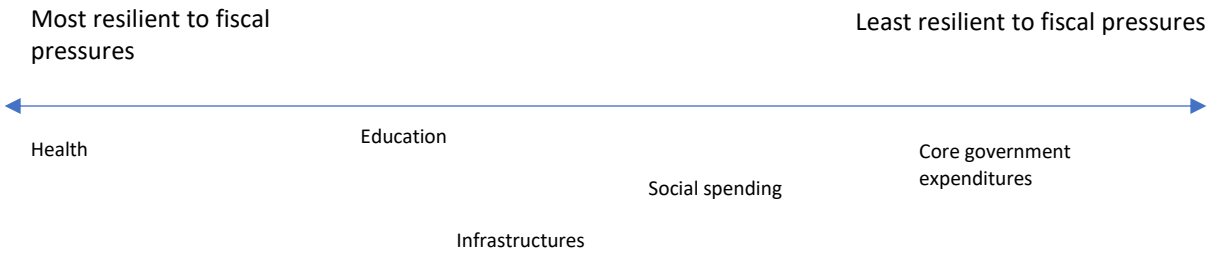
[4] The discount rate, i.e. how much an individual is willing to sacrifice immediate welfare for future gains, varies between individuals and depends on ingrained psychological factors like the ability to foreshadow herself into the future that can explain variation in individuals' discounting of the future (Wang 2018). In his dissertation, Wang (2018) finds that the level of education tends to affect discount rates, as more educated individuals tend to be more patient and have the resources to wait for long term rewards.

[5] Still, some studies show that voters care about long term economic performance (not just recent short-term performance) and about preventive spending (e.g. Bechtel and Hainmueller, 2011; Hellwig and Marinova, 2015; Wlezien, 2015)

spending to implement visible projects in influential districts (Breunig and Busemeyer 2012; Ferland and Jacques 2019). Secondly, budget rules in Canadian provinces allow governments to put gross fixed capital investments (infrastructure, public buildings, etc.) directly on public debt, without considering them as current government expenditures. Hence, a government can officially register a budget surplus, even if investments in gross fixed capital formation increase its level of public debt.

In brief, I expect that health will be the most resilient type of expenditures to fiscal pressures because it is a life cycle risk and that most citizens want public insurance against it. In contrast, core government expenditures should be the least resilient because they do not offer visible and popular benefits to the public. Education should be less resilient than health care, as it is characterized by an intertemporal trade-off. Social spending should be more resilient than core expenditures, but not as resilient as the three other categories because they are means tested. Despite intertemporal trade-offs, infrastructure spending should be more resilient than core government expenditures because it offers direct benefits to governments in the Canadian case (Ferland and Jacques 2019; Joanis 2011). Figure 2 presents these theoretical expectations.

Figure 2. Hypotheses about expenditure resilience to revenue shortages in the Canadian case.

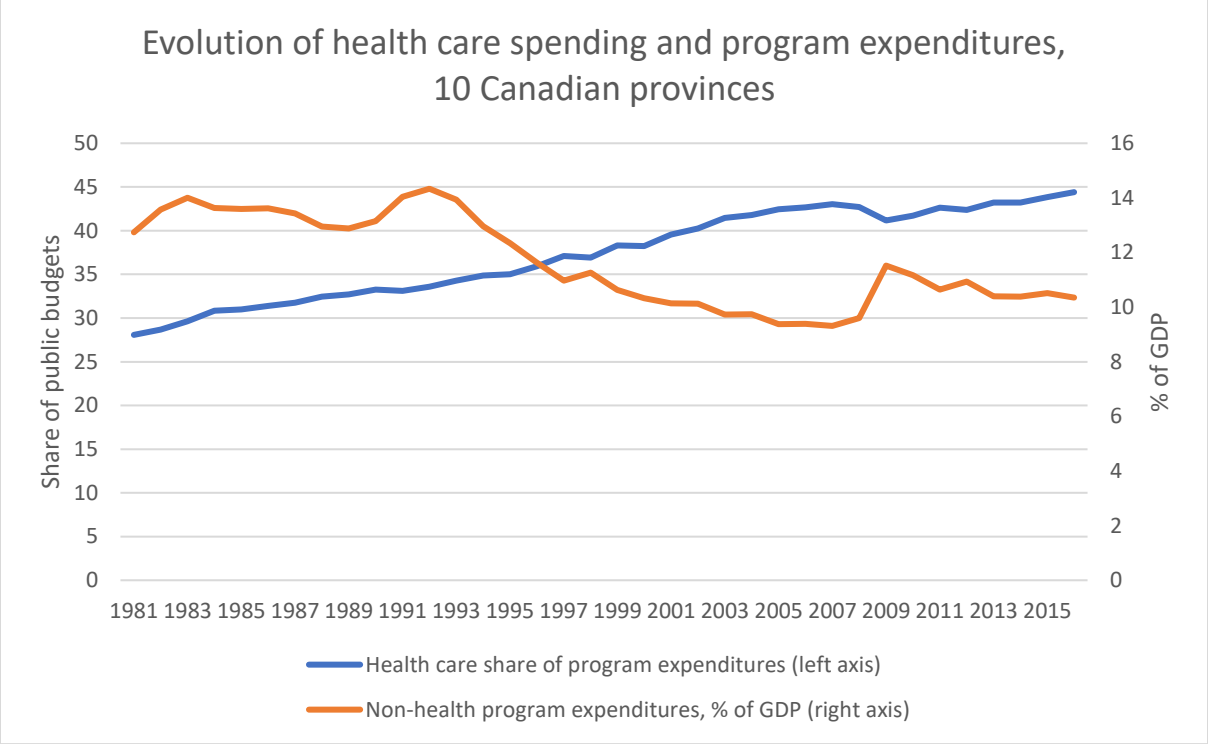


2. Why is the Canadian case interesting: health care and fiscal federalism.

The evolution of health care expenditures in Canadian provinces reflects the theoretical expectations developed in the previous section: health care is never cutback. With population aging, costly technological innovations and significant increases in salaries in the health care sector (particularly for doctors) health care costs have been rising rapidly in Canadian provinces (Clavet et al. 2013; Conference Board 2014). Figure 3 shows that health care represents a growing share of

provincial expenditures from 1981 to 2016, as health care went from an average of 28% to 44% of provincial program expenditures[6]. Not only did health care spending increase in relative terms, but rising health-care costs are also associated with a decline of other types of expenditures in absolute terms. Indeed, figure 3 shows that non health care provincial program expenditures significantly dropped since 1992, from 14.3% to 10.3% of GDP. This is because total expenditures have not gone up despite rising health care costs, suggesting a crowding out effect of other expenditures.

Figure 3. Evolution of health care program funding in contrast to other programs.



This situation could become even more severe in future decades. Recent analyses conducted on the Quebec case, the province with the highest share of program expenditures allocated to health, shows that health care expenditures could easily grow up to represent 63% of total expenditures (from 44% now) by 2048 just because of rising costs due to population aging (Force Jeunesse 2019)[7]. To answer these challenges, some pundits have even called for a partial privatization of the popular

[6] Program expenditure represent all government expenditures except interest payments on public debt (capital expenditures are also sometimes excluded).
[7] This number excludes cost inflation from the analysis and assumes that non-aging related cost will follow inflation, which is a rather conservative estime.

universal health care system to alleviate the public purse and to give the opportunity to wealthier patients to receive services more quickly.

Public health care is provided by provincial government, although the federal government has contributed to the development of the system and its funding. The first universal health insurance system in the country was developed by a left-wing party (the CCF) in power in Saskatchewan in the 1960s. To contribute to the expansion of the program in other provinces, the federal government used shared cost programs, where the government of Canada was funding 50% of the program's cost if a province funded the other half and was respecting the federal government's conditions (Maioni 1998). This system was replaced in 1977-78 by a block grant system which diminished the federal share of health care funding to 25%. The federal share of funding was reduced even more after the federal government implemented a large fiscal consolidation in the mid 1990s. To reduce expenditures and balance its books, the federal government cutback transfers to provinces by about third, reducing the federal share of health care funding to a historic low of 14% in 1998. A more generous federal transfer was implemented from 2004 to 2014, rising the federal share of funding to 23%, but the average federal transfer growth was brought below the growth of health care for the next decade, after a new agreement reached in 2013 (Québec 2018).

It is not surprising that federal transfers do not keep pace with the inflation of health care costs since the federal government has relatively few incentives to significantly raise transfers to other levels of government. Firstly, by holding a tight grip on health care transfers, the federal government hopes to control costs and to steer provinces to address specific issues[8]. Secondly, rising transfers involves that the federal government will have to take the blame for higher taxes, deficits or for cutbacks to federal programs used to fund additional transfers to provinces. In contrast, provincial governments can take credit for better health care services, without having to take the blame for the cost of funding. As Canadian citizens are not particularly well aware of the responsibilities of each level of government (Cutler 2008), it is unlikely that they would be able to accurately blame federal governments' transfers for service cuts in their local health-care system. This game of blame and credit attribution would be different if party systems were integrated between the federal and the provincial levels. However, Canadian party systems are decentralized: there are relatively few connections

[8] For example, the last federal-provincial agreement on health care transfers earmarked some federal transfers to mental health and long-term elderly care, two areas highlighted by the federal government as in need of funding.

between one another, as regional interest differ significantly between provinces (Chibber and Kollman 2004; Stewart and Stewart 1997). Some regional parties are strong in the party system of a particular province but have weak influence in Ottawa and vice-versa. Canadian provincial premiers do not hesitate to blame Ottawa and present themselves as the sole defender of the province's interest, even if they belong to the "same" party (Smiley 1987). Thus, the federal government has more incentives to use its spending power, the right of the federal government to spend in areas of provincial jurisdictions, to create new programs rather than to increase transfers to provinces.

Since federal transfers are unlikely to keep pace health care cost inflation, health care costs are likely to represent a growing proportion of provincial budgets. If provinces do not raise their own source revenues, health care cost inflation should crowd out other types of expenditures. As their fiscal room to maneuver decreases, provinces might not be able to implement or sustain programs in their other areas of jurisdiction. As the degree of centralization of the Canadian federation evolves along with the balance of power between the constitutive units of the federation rather than by constitutional means (Banting 2005; Lecours 2018), it is conceivable that this lack of fiscal room to maneuver would tilt the balance towards a centralization of the federation.

3. Data and Methods.

In 2010, Statistics Canada terminated the financial management system, its main series on provincial budget data that allowed to build theoretically meaningful categories of expenditures. Fortunately, Kneebone and Wilkins from the University of Calgary Policy School assembled a dataset aggregating provincial public accounts to compare fiscal policy choices made by provincial governments. Kneebone and Wilkins' categorization of expenditures is divided in four broad categories: education, health, social spending and "other" government spending.

Unfortunately, Kneebone and Wilkins do not include data on the capital account. Hence, I must rely on Statistics Canada to have access to provincial government's data on gross fixed capital formation, which is the standard proxy in the literature for infrastructure investments (Breunig and Busemeyer 2012; Keman 2010). However, Statistics Canada only provides "general government" gross fixed capital formation, which doesn't allow to disentangle the federal share of expenditures from the

provincial share. Also, such a measurement of gross fixed capital formation involves double counting, as buildings (like schools and hospitals for example) could be included in other categories as well. This measure of gross fixed capital formation is not ideal, and results must be interpreted with caution. The dependent variables are expressed as compositions of total program expenditures, which excludes interest payments on the public debt. Hence, I build a four-category composition (health, education, social spending and core expenditures) and a five-category composition adding gross fixed capital formation.

The main independent variable is a measure of exogenous revenue sources, expressed as a percentage of GDP. It includes both federal transfers and natural resource revenues. Both revenue sources are outside of the direct control of provinces: provinces have to suffer the consequences of changes in federal transfers or of reduced resources royalties. Since resource royalties are dependent on international market prices (and access to them), reductions of royalties are likely to be caused by exogenous factors, outside the direct control of provincial governments[9]. In contrast, changes to overall tax revenues raise issues of endogeneity as tax cuts could be implemented when governments know they can avoid difficult choices about expenditure cutbacks (for example, if their fiscal room to maneuver is large, or if public debt is low) or be directly related to decisions about expenditures. Also, changes in own sources revenues should be associated with government partisanship, which should also affect expenditure prioritization. Hence, I contrast the impact of the conscious decision to modify levels of provincial government own source revenues to exogenous revenue shocks that are outside of governments' control.

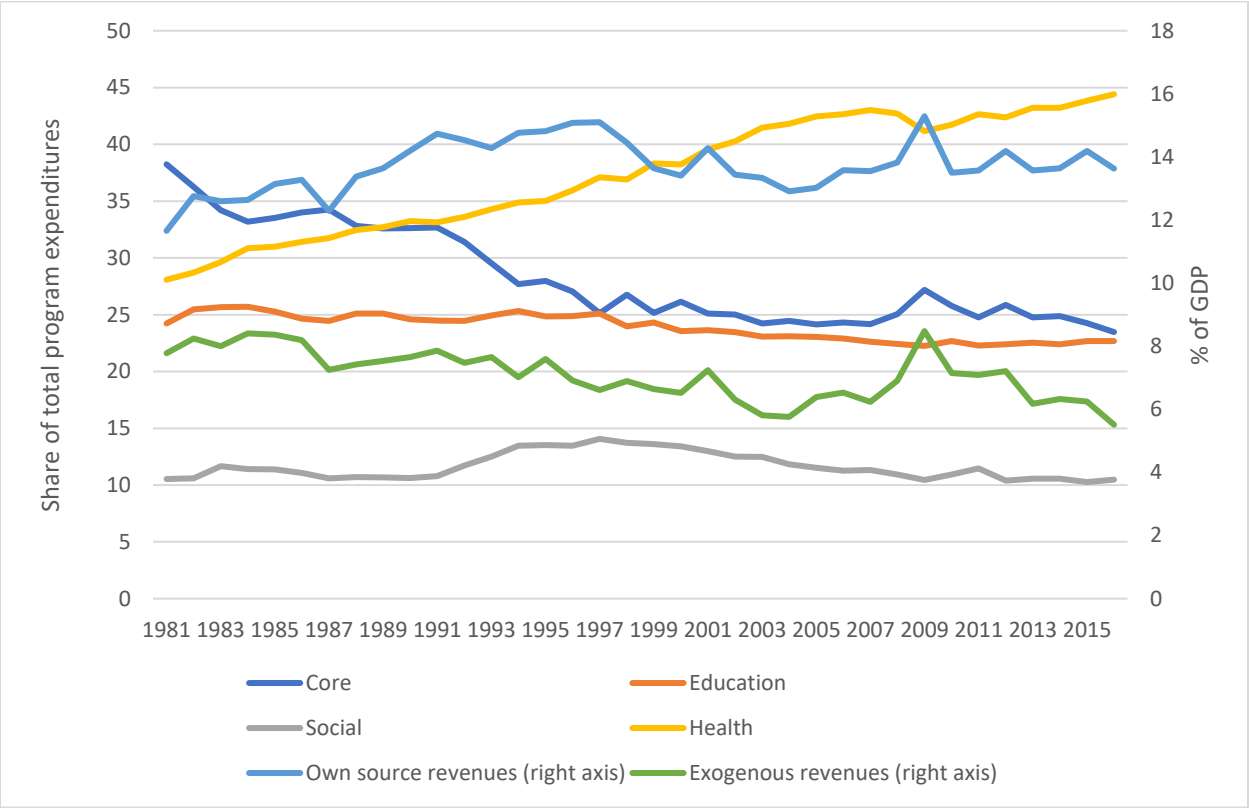
Since own source revenues should not be independent of government partisanship, I include three different partisanship dummy variables in the models (see Haddow 2015 for a similar measurement strategy)[10]. When conservative parties (and BC Liberals) are in government, the variable *Right* is coded 1, when the New Democratic Parties or the Parti Québécois are in government, the variable *Left* is coded 1, while when Liberal parties (except BC Liberals) are in government, the variable *Centre* is coded 1. As for control variables, I use Statistics Canada measures of annual GDP growth,

[9] In our dataset, 4 provinces perceive resource royalties (TNL, Sask, Alb, and BC) accounting for an average of 16% of their total revenues.
[10] I thank Alain Noël for sharing his dataset.

the ratio of young (18-) and older (65+) citizens on the total population and use Kneebone and Wilkins' data to control for deficit levels and interest payments on the debt service.

Figure 4 presents the evolution of expenditures (left axis) as a percentage of total program expenditures as well as own sources and exogenous revenues (right axis, as a percentage of GDP) in the ten Canadian provinces, on average, from 1980 to 2015. Apart from a constant increase in the share of expenditures allocated to health care, the most notable change is the decline of core expenditures, decreasing from 38.2 to 22.7% of program expenditures. Still, core expenditures' share of spending remained roughly constant since the late 1990s. Education has witnessed a small decline since the late 90s, from 25.1 to 22.6 % of program expenditures, after a period of stability in the 1980s and early 1990s. Social transfers remain the least expensive category and are maintained at a constant level on average for the whole period. Total revenues have remained constant from 1980 to 2015, as the decline of exogenous revenues (7.7% to 5.5% of GDP) has been compensated by a rise of own source revenues (from 11.7 to 13.6 % of GPD). Still, there is meaningful interprovincial variation to exploit in a quantitative analysis (see appendix figure A1 for descriptive trends by provinces).

Figure 4. Evolution of program expenditures and of revenues, 10 Canadian provinces, 1980-2015.



Methods: Compositional dependent variable analysis and error correction models

I use a compositional dependent variable analysis, a method designed to evaluate the impact of an independent variable on the relative size of each expenditure category. Analyzing the impact of revenue changes on levels of spending is tautological: no one should be surprised to observe that overall cuts to revenues and expenditures are associated with retrenchment of specific policies. In order to determine how policymakers prioritize expenditures when public finances face fiscal pressures, it is better to use a modelling strategy highlighting the trade-offs between categories of expenditures, such as compositional dependent variable analysis.

Compositional dependent variable analysis is a technique used when a dataset has multiple dependent variables whose value fit between 0 and 1 and whose total sum equals to one. Hence, the dependent variable is a composition, similar to a percentage of the total. Compositional dependent variable analysis could be a very pertinent method in comparative political economy of the welfare

state (Adolf et al. 2018; Philipps et al. 2016), because it involves modelling an explicit trade-off between budget categories that is closer to the "*empirical reality of governmental decision-making, where policy-makers are constantly faced with decisions on how to allocate scarce public resources across budget categories* (Breunig and Busemeyer 2012, 923)". Unfortunately, apart from Breunig and Busemeyer (2012), very few studies use this method in comparative political economy of the welfare state research.

In general, linear regression implicitly assumes independence between budget categories and thus cannot adequately model trade-offs between them. The goal of the compositional analysis is not only to understand if the independent variable has an impact on one category, but also if a change in this category has an impact on the other categories simultaneously. For example, a single linear equation could show that X has positive impact on education as a share of total expenditures but cannot identify the impact of this change in education spending on other budget categories. An equation-by-equation approach would analyze the effect of X on each category one after the other, but it would ignore that the individual components are likely to be negatively correlated (if the share of one budget category increases, the other should go down). In contrast, compositional dependent variable analysis focuses on the relative change in the proportion of a category relative to the other pieces of the compositional pie.

Such a modelling strategy for compositional variables is more realistic than linear regression because the former assumes that state budgets can take any values between positive infinity and negative infinity whereas in reality, they are bounded: a government cannot spend more than 100% or less than 0% of its budget on education, for example. In contrast, compositional dependent variable analysis assumes that values of the dependent variable fall between 0 and 1. It uses the log transformation of the compositional variables to free the data of the constraint of summing to zero, making them unbounded and independent, so that conventional linear techniques can be used (Adolf et al. 2018). Tomz, Tucker and Wittenberg (2002) propose to use Seemingly Unrelated Regressions (SUR) to analyze compositional dependent variables. However, their method ignores time series dynamics. To model overtime dynamics, Philips, Lipsmeyer and Whitten (2016) suggest using an error correction model.

I use the *dynsimpie* package in Stata developed by Phillips et al. (2016) for compositional dependent variable analysis. *Dynsimpie* does a log transformation of the data and uses seemingly unrelated regressions with an error correction model to analyze the short run and long-run effects of

changes in the independent variables. Such an error correction model is useful for datasets with serial correlation between variables, like this one. Then, the package transforms the log variables into their real values and present graphical representations of the models based on simulations of a counterfactual shock, a short-term change, on one of the independent variables at a chosen point in time (usually between periods 5 to 10). The simulations keep all the other independent variables and their sample mean (Phillips et al. 2016).

An error correction model is a general autoregressive equation without pre-imposed restrictions (De Boef and Keele 2008). This model predicts changes in the dependent variables but adds a lagged dependent variable as a covariate to account for dynamic changes. Each independent variable is first differenced and lagged one year. I include country fixed effects in the model to control for unobserved time invariant country-specific variables. The main advantage of the error correction model (ECM) is that it can estimate the long-term dynamics assessing the steady state equilibrium and the country differences in levels of each dependent variable as well as the short-term deviations from that equilibrium (De Boef and Keele 2008). The model uses a Bewley transformation to calculate the long-term effects. Like most time-series models, an error correction model should be used only when variables have the same order of integration and are cointegrated. Keele et al. (2016). Unit root tests[11] reveal that my compositional variables have a unit root, while the Engle-Granger test for cointegration reveals that the variables are cointegrated. All models include a time trend and estimate the following equation, inspired by Philipps et al. (2016, 273):

$$\Delta Stj = B0j - \alpha_j s_{j_{t-1}} + \beta_{sj}\Delta\chi_t + \beta_{lj}\chi_{t-1} + \Sigma\,\mathrm{tj}$$

Where ΔStj is the change in the logged ratio of dependent variables category jfor j > 1 relative to baseline category j=1 from time t-1 to time t;
χ_t is a vector of independent variables values at time t;
α_j are adjustments parameters that measure the long run error correction processes.
β_{sj} is a vector of short run effects;
β_{lj} is a vector of parameters that can be combined with $\alpha_j s_{j_{t-1}}$ to estimate long term effects of changes in each independent variables;
Σ tj is a matrix of stochastic disturbance terms that can be correlated accross the equations

[11] Using Fisher type tests (both Philipps-Perron and Dickey Fuller) as well as Levin, Lin and Chu tests.

4. Empirical analysis of budget composition

Table 1 presents the impact of changes in exogenous revenues and of own source revenues on four categories of expenditures. Exogenous revenue changes are associated with a short-term decrease of core expenditures relative to all three other categories. Changes in own source revenues affect more variables: both in the long term and in the short term, a decrease of own source revenues increases the share of health care expenditures relative to education, and in the short term, of social spending relative to education. Lower own source revenues are also associated with a lower proportion of core government expenditures relative to all three other categories in the short term. Regarding government partisanship, left and centre government do not modify expenditure composition significantly (models not shown) but right-wing governments have a significant negative impact on the share of expenditures allocated to social spending relative to the three other categories[12]. As social transfers are often means tested towards the poor in Canada and are not as popular as education and health, right-wing governments do not hesitate to prioritize health and education over social services, whether or not they face revenue shortages. Figure A2 in the appendix present the significant negative impact of right-wing government on the share of social spending.

[12] To save space, the relationship between social spending and health care is not presented in the table, but right wing governments are associated with decreases in the proportion of social spending relative to health care as well.

Table 1. Impact of revenue changes on four categories. Canadian provinces, 1980-2015.

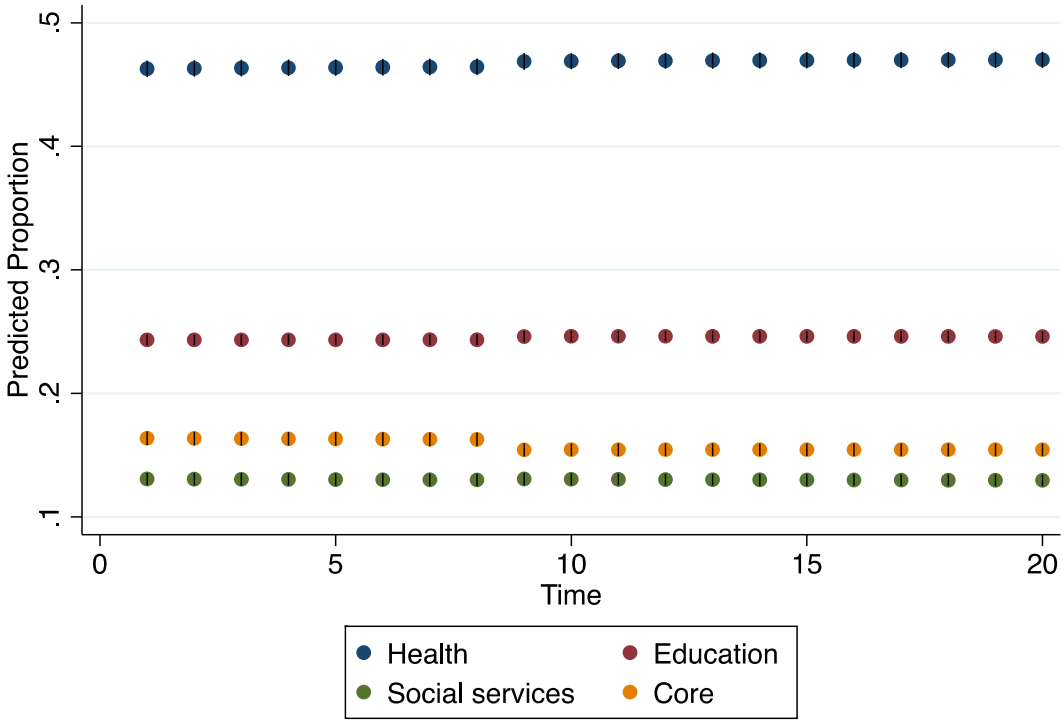
	1 Health/edu	2 Social/edu	3 Health/core	4 Edu/core	5 Social/core	6 Health/edu	7 Social/edu	8 Health/core	9 Edu/core	10 Social/core
Lagged dependent variable	-0.0542***	-0.103***	-0.0631***	-0.0619***	-0.128***	-0.0736***	-0.107***	-0.0874***	-0.0755***	-0.133***
	(0.0176)	(0.0233)	(0.0174)	(0.0159)	(0.0209)	(0.0186)	(0.0233)	(0.0176)	(0.0160)	(0.0199)
Δ Exogenous revenues	0.00231	0.00247	-0.0480***	-0.0504***	-0.047***					
	(0.00309)	(0.00641)	(0.00627)	(0.00690)	(0.00832)					
Exogenous revenues t-1	0.000133	0.000996	-0.00244	-0.00247	-0.00425					
	(0.00127)	(0.00264)	(0.00268)	(0.00289)	(0.00357)					
Δ own source revenues						-0.0163***	-0.0182**	-0.0455***	-0.029***	-0.047***
						(0.00371)	(0.00787)	(0.00804)	(0.00909)	(0.0105)
Own source revenues t-1						-0.0067***	-0.00512	-0.00598	0.00157	-0.00514
						(0.00217)	(0.00429)	(0.00445)	(0.00489)	(0.00569)
Δ share of population 65+	-0.0148	-0.0356	-0.0410	-0.0248	-0.0490	0.0248	0.00509	0.00960	-0.0161	-0.00310
	(0.0312)	(0.0646)	(0.0631)	(0.0696)	(0.0839)	(0.0315)	(0.0671)	(0.0684)	(0.0773)	(0.0892)
Δ share of population 18-	-0.0194	0.0640	0.0291	0.0480	0.116*	-0.0156	0.0620	0.0704	0.0825	0.164***
	(0.0225)	(0.0473)	(0.0457)	(0.0504)	(0.0609)	(0.0206)	(0.0446)	(0.0448)	(0.0504)	(0.0590)
Δ growth	0.00258**	0.00321	-0.00518**	-0.007***	-0.00374	-0.000505	-0.000206	-0.00603**	-0.00564*	-0.00519
	(0.00126)	(0.00261)	(0.00256)	(0.00282)	(0.00340)	(0.00130)	(0.00277)	(0.00283)	(0.00320)	(0.00369)
Δ deficit	-0.00175	-0.00122	-0.0551***	-0.053***	-0.053***	-0.0106***	-0.0113*	-0.0583***	-0.047***	-0.058***
	(0.00283)	(0.00587)	(0.00575)	(0.00633)	(0.00762)	(0.00311)	(0.00661)	(0.00676)	(0.00763)	(0.00879)
Δ debt service	0.00173	0.00828	0.0384***	0.0368***	0.0456***	0.00129	0.00808	0.0407***	0.0395***	0.0475***
	(0.00316)	(0.00655)	(0.00640)	(0.00705)	(0.00849)	(0.00303)	(0.00645)	(0.00659)	(0.00744)	(0.00857)
Δ right	0.0142	-0.0165	-0.0318	-0.0462*	-0.0610*	0.0172	-0.0109	-0.00225	-0.0187	-0.0302
	(0.0123)	(0.0255)	(0.0249)	(0.0274)	(0.0331)	(0.0120)	(0.0255)	(0.0260)	(0.0294)	(0.0338)
Share of population 65+ t-1	0.00356	-0.00414	-0.00568	-0.00994*	-0.0166**	0.00396	-0.00446	-0.00650	-0.0106*	-0.0185***
	(0.00296)	(0.00535)	(0.00518)	(0.00574)	(0.00684)	(0.00280)	(0.00522)	(0.00529)	(0.00609)	(0.00695)
Share of population 18- t-1	-0.00117	-0.000752	-0.00365	-0.00238	-0.00511	-0.000476	0.000473	-0.00436	-0.00322	-0.00499
	(0.00142)	(0.00297)	(0.00297)	(0.00322)	(0.00383)	(0.00135)	(0.00288)	(0.00307)	(0.00338)	(0.00384)
Growth t-1	0.00349**	-0.000719	-0.0099***	-0.013***	-0.012***	0.000547	-0.00379	-0.0103***	-0.011***	-0.013***
	(0.00161)	(0.00335)	(0.00329)	(0.00361)	(0.00437)	(0.00163)	(0.00346)	(0.00354)	(0.00400)	(0.00462)
Deficit t-1	-0.00178	0.00275	-0.0101**	-0.00819	-0.00703	-0.00605**	-0.00139	-0.0105**	-0.00399	-0.00619
	(0.00249)	(0.00514)	(0.00506)	(0.00555)	(0.00670)	(0.00249)	(0.00519)	(0.00531)	(0.00597)	(0.00690)
Debt service t-1	0.000264	-4.91e-05	7.04e-06	-0.000246	0.000939	0.000852	0.000620	0.00115	0.000163	0.00155
	(0.000744)	(0.00154)	(0.00152)	(0.00168)	(0.00205)	(0.000712)	(0.00152)	(0.00156)	(0.00176)	(0.00204)
Right t-1	-0.00405	-0.0336**	-0.00535	-0.00118	-0.0420**	-0.00866	-0.0364**	-0.00796	0.00277	-0.0428**
	(0.00689)	(0.0143)	(0.0141)	(0.0155)	(0.0188)	(0.00687)	(0.0146)	(0.0151)	(0.0169)	(0.0197)
Constant	0.0242	0.0485	0.311**	0.287*	0.416**	0.0987	0.0813	0.422***	0.287	0.484**
	(0.0671)	(0.145)	(0.139)	(0.153)	(0.180)	(0.0704)	(0.151)	(0.161)	(0.176)	(0.199)
Observations	306	306	306	306	306	306	306	306	306	306

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

However, such an output table can only report the statistical significance of the variables because the dependent variables are expressed as log ratios, making meaningful interpretations difficult. Hence, figure 5 models the simulated impact of a negative shock to exogenous revenues, a decrease of 1.25% of GPD, which is the equivalent of one standard deviation above the mean of the average first difference of exogenous revenues. Figure 5 reveals that at the 9th time period, where the simulated negative shock to own source revenues occurs, the proportion of core expenditure is reduced relative to health and education spending. Simulations of the impact of a negative shock to own source revenues display similar results, except that only the proportion of health care increases (see figure A3 in the appendix). However, figure 5 reveals that the substantive impact of shocks to exogenous revenues remains small: the share of core expenditures is reduced, but not by much. The

substantive impact of right-wing government on social spending is more sizeable (see figure A2 in the appendix)

Figure 5. Impact of a negative shock to exogenous revenues (-1.25% of GDP).



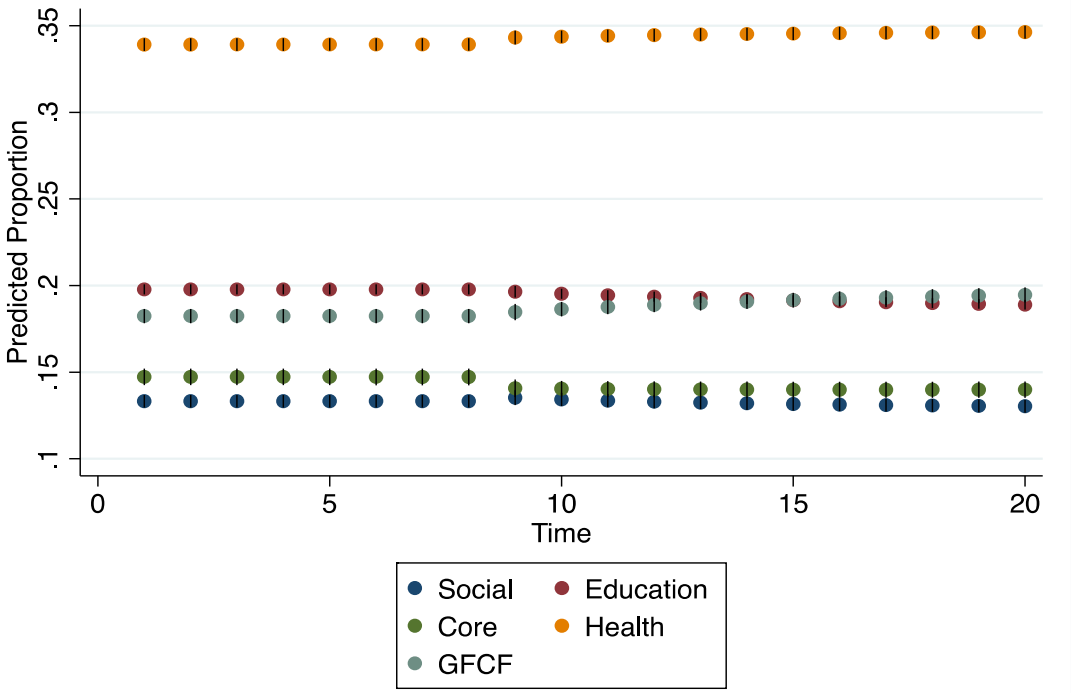
Note: 95% confidence intervals

Adding gross fixed capital formation to the model reveals a similar picture. Exogenous revenue changes are only associated with a short-term decrease in core government expenditures, relative to all other categories (see figure A5 in the appendix). The picture is more complex with own source revenues (see table A4 in the appendix). Figure 6 shows that core government expenditures are vulnerable a negative shock to own source revenues both in the short term and in the long term. Also, decreases of own source revenues are associated with lower education expenditures relative to health care and gross fixed capital formation in the short term and the long term, but even to social spending in the short term. Thus, education is vulnerable to conscious decisions to decrease revenues, but is not affected by exogenous changes to revenues that are out of government's control.

Gross fixed capital formation is resilient to fiscal pressures in Canada, whereas they were particularly vulnerable in other OECD countries (see chapter 3). This might be because infrastructure

spending is used to target geographically concentrated constituencies for political purposes in Canada (Ferland and Jacques 2019; Joanis 2011), which has the advantage of limiting the degree of intertemporal trade-offs they face. In fact, models using own source revenues as the main independent variable reveal that lower revenues are associated with a larger proportion of gross fixed capital formation relative to education spending and core expenditures, but not relative to health care. This could be explained by government partisanship, as decreases in own sources revenues are endogenous to government partisanship, since right-wing governments tend to decrease levels of own source revenues, while left-wing government increase them (see table A6 in the appendix). Also, right-wing governments are associated with higher gross fixed capital formation. Thus, decreases in own source revenues are also related to right-wing government's expenditure priorities, namely gross fixed capital formation and health, relative to education and social spending.

Figure 6. Impact of a negative shock to own source revenues (1.25% of GDP).



Note: 95% confidence intervals

In brief, the analysis reveals that when governments face exogenous revenue reductions that are out of their control, their immediate reaction is to cutback core government expenditures; the least visible and arguably least popular types of expenditures. Provinces' reactions to the significant

retrenchment of federal transfers in the mid 1990s is a concrete example of the situation. Federal transfers represented 21% of Quebec revenues from 1988 to 1993. Then, the federal government implemented a large scale fiscal consolidation and cutback social transfers to provinces by one third in the 1994 budget, reducing the federal transfers' share of Quebec's revenues to 14.6% in 2000. Core expenditures were reduced from around 24% of program expenditures (between 1988 to 1993) to 16% in the decade of the 2000s. During the period, health care's share of budgets grew from 35.6% in 1993 to 41.1% in 2000. In fact, both figures 5 and 6 reveal that negative shocks to revenues contribute to a rising proportion of health care spending relative to all other types of expenditures, since health care spending is rarely retrenched. In models with gross fixed capital formation and own source revenues, education expenditures are also vulnerable to revenue shortages, while social spending is mostly affected by the presence of right-wing governments, not directly by revenue shortages.

5. The impact of budget composition on inequality.

I complement this study with an exploratory analysis of the impact of budget composition on income distribution. While the impact of levels of spending on income inequality and redistribution has been extensively studied, very few researches have analyzed whether changes in budget composition have any effect on income distribution.[13]

I use Statistics Canada data on market and disposable Gini and for controls for economic growth, age dependency ratio (adding the proportion of citizens over 65 to those below 18 divided by the total population of a province), the employment rate and the share of employment in the service sector (as a proxy for deindustrialization). I also add a time trend, as income inequality in Canada tends to rise overtime (Green et al. 2016). Ideally, I would also control for unionization, international trade and financialization, but these data are not available for a large proportion of years covered in the dataset, which would significantly reduce the number of cases.[14] Still, studying Canadian provinces considerably reduce confounding factors that have an impact on inequality in cross country studies, diminishing the need for additional controls.

[13] Changes in shares of expenditures indirectly affects levels of spending, as total program spending as a proportion of GPD tends to be relatively constant over time.
[14] Unionization is available since 1997 (1990 in some datasets), while international trade and financialization from 2000 only

Table 2 presents models of the impact of budget compositions on redistribution, measured as relative redistribution (market Gini-disposable Gini/market gini). I use panel corrected standard errors along with province fixed effects and a correction for first order autocorrelation (Beck and Katz 1995). Table 1 reveals that the proportion of the budget spent in health care and in social transfers has a positive impact on redistribution, while the share core expenditure has a negative impact on redistribution. Both revenue variables (exogenous revenues and own source revenues) have no impact on redistribution. Models using absolute redistribution (measured as market income Gini- disposable income Gini) as a dependent variable display similar results, except that own source revenues have a positive impact on absolute redistribution. As a robustness check, I also used models separating within-province and between-province effects with random effects and a lagged dependent variable, following Bell and Jones (2015)'s advice for dealing with time series with slowly moving independent variables. These models (shown in appendix table A7) display very similar results to those of table 2. This suggests that rising health care spending has not produced a negative impact on redistribution, to the contrary. Still, it remains hard to conceive how health care, which mostly takes the form of services, not of cash transfers, could produce any direct impact on redistribution, since service's impact on income distribution is not measured by the Gini coefficient. Similarly, it is not particularly surprising that core expenditures' share has a negative impact on redistribution because these expenditures are not designed to redistribute income. In brief, as long as rising health care costs do not crowd out social spending, the dynamics described in this article should not have a detrimental impact on a province's redistributive capacity.

Table 2. Models predicting relative redistribution, all variables lagged one year.

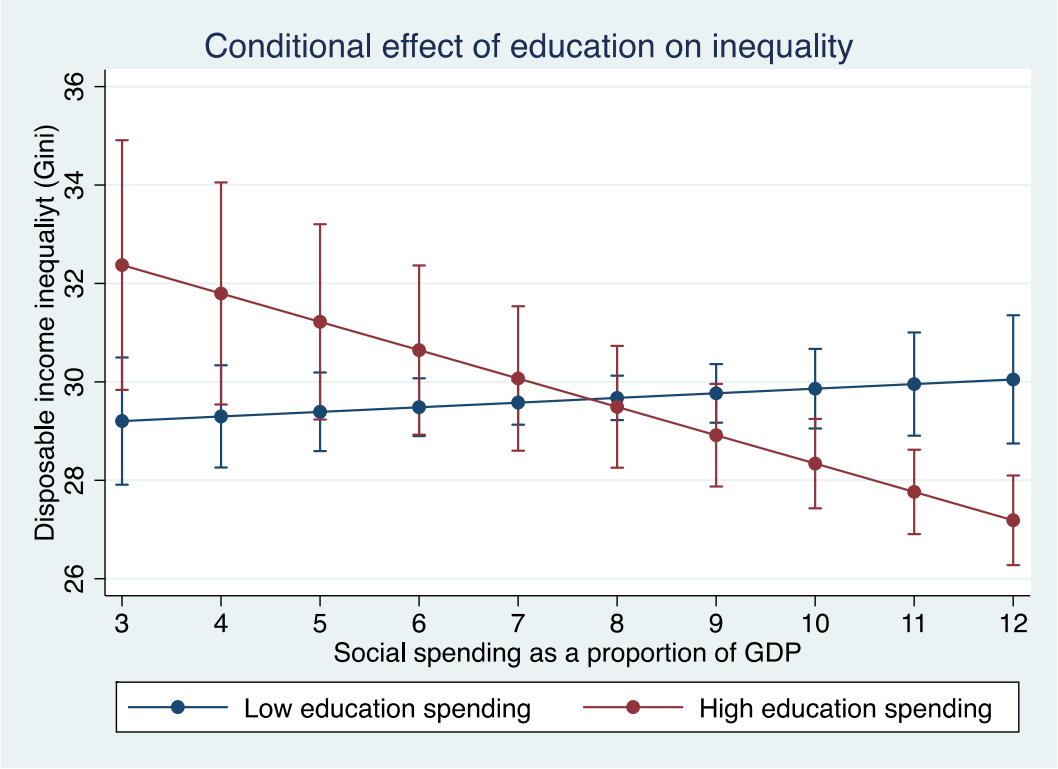
	1	2	3	4	5	6
Health share	0.0713**					
	(0.0348)					
Core share		-0.0526**				
		(0.0229)				
Education share			-0.0237			
			(0.0354)			
Social share				0.0885*		
				(0.0465)		
Exogenous revenues					-0.0370	
					(0.0685)	
Own source revenues						0.000906
						(0.0666)
Growth	0.0411	0.0393	0.0437*	0.0319	0.0854***	0.0893***
	(0.0254)	(0.0261)	(0.0254)	(0.0260)	(0.0283)	(0.0291)
Dependency	0.0568	0.0481	0.0491	0.0301	-0.00630	-0.00804
	(0.0530)	(0.0494)	(0.0561)	(0.0555)	(0.0558)	(0.0560)
Deindustrialisation	33.89***	34.26***	33.24***	34.91***	31.08***	30.42***
	(8.532)	(8.169)	(8.800)	(9.116)	(8.817)	(8.811)
Employment rate	-0.276***	-0.255***	-0.274***	-0.263***	-0.231***	-0.228***
	(0.0618)	(0.0586)	(0.0663)	(0.0625)	(0.0618)	(0.0624)
Trend	0.0555	0.0608	0.0856**	0.0850**	0.0830**	0.0855**
	(0.0450)	(0.0411)	(0.0435)	(0.0429)	(0.0417)	(0.0419)
Constant	29.79***	32.80***	33.09***	30.74***	35.02***	34.92***
	(8.116)	(7.535)	(8.558)	(8.537)	(7.836)	(7.882)
Observations	340	340	340	306	350	350
R-squared	0.873	0.865	0.874	0.875	0.818	0.818
Number of provid	10	10	10	9	10	10

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

What about the impact of education? Some analysts suggest that provinces should prioritize education policies to foster equality of opportunity in the long term rather than relying on cash transfers to improve equality of conditions in the short term (Scarfone et al. 2017). Table 2 reveals that education's share of budget has no direct impact on inequality. Still, it is possible that levels of education spending matter more education's share of budgets. Figure 7 presents a model of interactions between education and social expenditures, using the same control as in table 2 as well as province fixed effects and clustered standard error. Here, social expenditures are the sum of health

care and Kneebone and Wilkins' measure of social spending. Figure 7 reveals that education's impact on inequality is conditional on the level of social expenditures. High education spending leads to lower levels of inequality only when social expenditures are high; at low levels of social expenditures, high spending in education does not lead to lower levels of inequality, to the contrary. Note that this figure uses disposable income inequality as a dependent variable and that the results of these regressions where not significant using relative or absolute redistribution as dependent variables. This goes in the direction of Beramendi's (2015) cross country analysis suggesting that social investments in education will only have an egalitarian impact if they are implemented in a state with high revenue generation capacity used to sustain large levels of social spending. Otherwise, investments in education do not lead to egalitarian outcomes. A government cannot aim for equality of opportunity without securing some degree of equality of conditions.

Figure 7. Conditional impact of education on inequality, for different levels of social spending.



6. Discussion and conclusion.

The analysis in section four reveals that negative shocks to government revenues contribute to a rising proportion of health care spending relative to all other types of expenditures. As discussed in the theoretical section, health care is a life cycle risk against which most citizens want to be publicly insured, regardless of their class and ideological orientation. Moreover, aging and cost inflation tend to increase health care spending in Canada. It is thus very difficult for a government to reduce health-care spending to cope with fiscal pressures; governments have to cutback elsewhere when they are exposed to revenue shortages. The favoured area of retrenchment in Canadian provinces is core government expenditures, which comprises the legal-rational functions of the state (like the bureaucracy, the justice system, public safety and economic affairs) as well as more post-modern functions, like environmental protection and culture. Core expenditures are arguably less popular and less visible than education, health and to a lesser extent social spending, which make them an easier target for cutbacks. In future iterations of this chapter, it would be interesting to analyze in more details which type of core expenditures are retrenched. I suppose that those characterized by inter-temporal trade-offs, like research and development, and those that are the least popular and visible, like prisons, should be more subject to retrenchment than popular and visible policies like culture or environmental protection. Since detailed cross provincial data are not available, this should be done with within-province case studies.

The impact of fiscal pressures on three other types of expenditures is more complex. Reductions of own sources revenues are associated with a reduction of the proportion of education expenditures relative to social spending, gross fixed capital formation and health care. Despite its popularity, education suffers from an intertemporal trade-off, in the sense that the benefits of a more educated workforce take years to materialize, whereas social spending and health care offer direct benefits to constituents in the short term. Indeed , social spending is resilient to revenue shortages, except when a right-wing government is in power, as they tend to reorient budgets away from social spending. In contrast, gross fixed capital formation seems to enjoy support across the political spectrum and are particularly resilient to fiscal pressures in Canadian provinces, quite possibly because they can be used to target geographically concentrated constituencies for political purposes, which reduces the impact of intertemporal-trade-offs they normally face (Breunig and Busemeyer 2012; Ferland and Jacques 2019; see also chapter 3). Further research has to be conducted to understand

why the impact of own sources revenues on expenditure composition differs from the impact of exogenous revenues.

One main implication can be inferred from this analysis. As discussed in section 2, a crowing out of provincial government's policies by the combination of rising health care spending and fiscal pressures raise concerns about provinces' autonomy in the federation. However, core government expenditures have been reduced significantly in Canadian provinces since the 1980, but we cannot characterize the last three decades as a period of centralization of the federation (Lecours 2018). It is fairly possible that rising share of health expenditures combined with fiscal pressures will only have an impact on provinces' policy autonomy and change the balance of power in the federation in the future, once health care spending reaches an unsustainable level. More research has to be conducted to determine the impact of fiscal pressures on Canadian federalism.

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Appendix

Figure A1. Evolution of spending (shares of program expenditures on the left scale) and revenues (on the right scale, as a % of GPD) in ten provinces, 1980 to 2015.

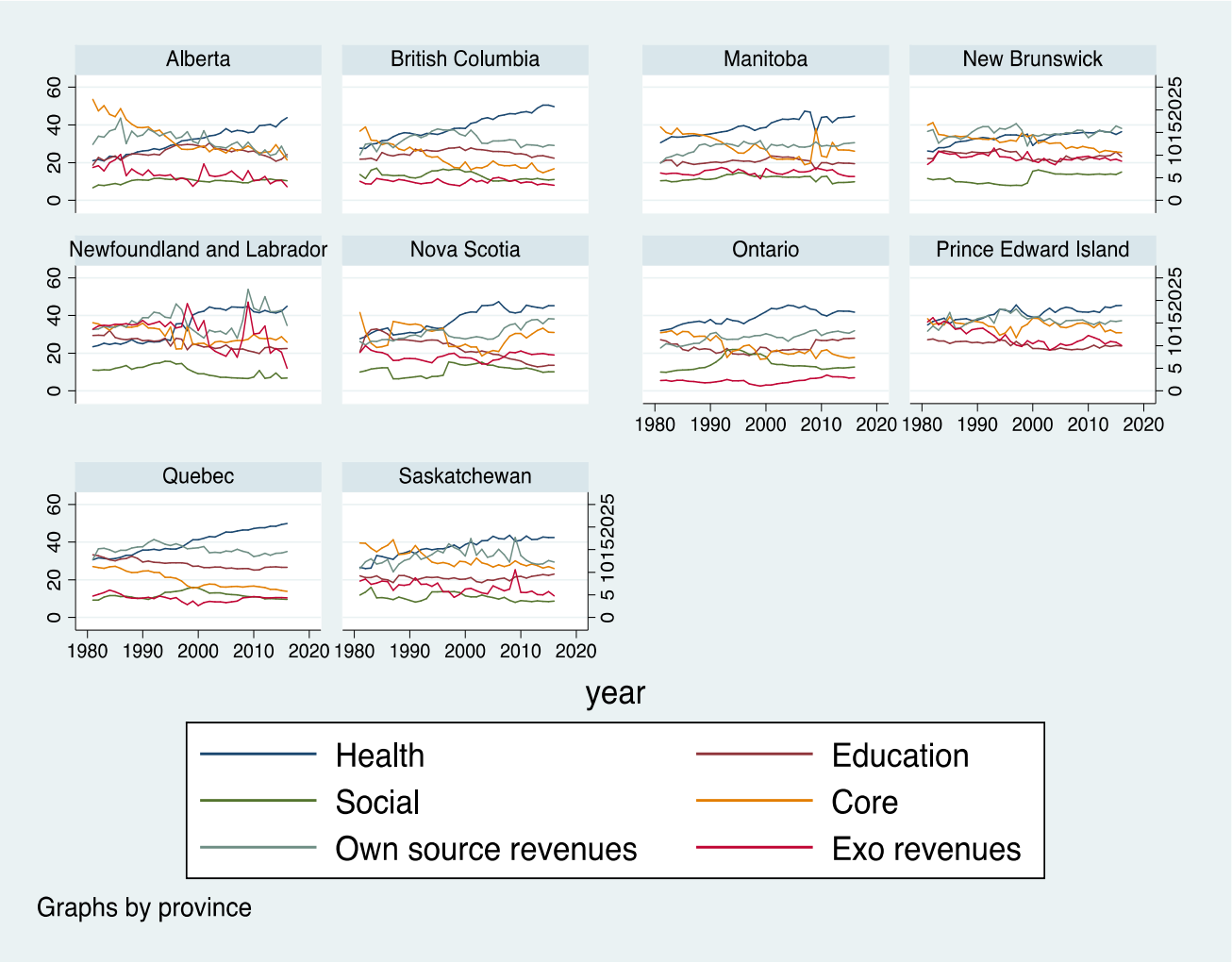
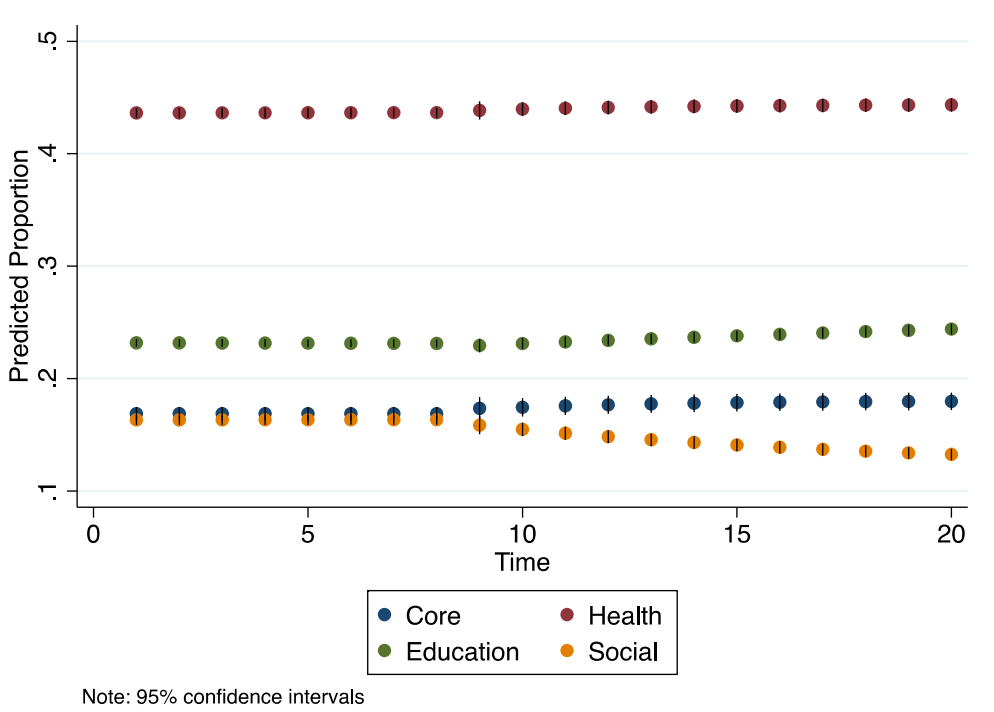
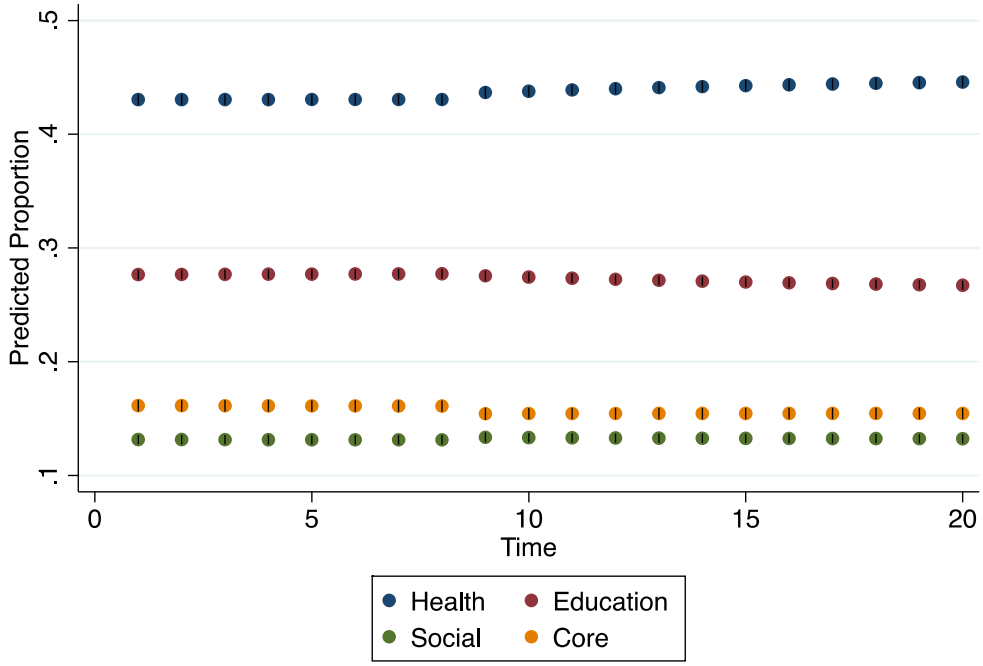


Figure A2. A rightwing party enters government at period 9, using variables of table 1



Note: 95% confidence intervals

Figure A3. Impact of a negative shock to own source revenues (-1.25% of GPD).



Note: 95% confidence intervals

Table A4.
Models with five categories.

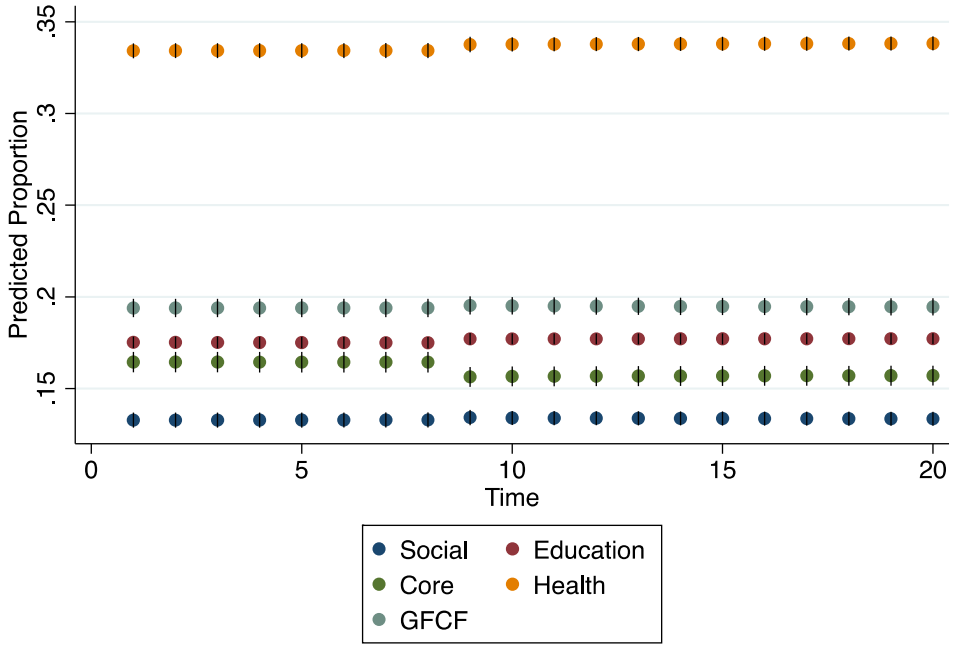
Controls (same as in table 1) are included in the models but not shown.

	1	2	3	4	5	6	7	8	9	10	11
	Social/health	Edu/health	Core/health	Social/GFCF	Edu/GFCF	Core/GFCF	Health/GFCF	Social/core	Edu/core	Edu/social	Health/social
Lagged DV	-0.101***	-0.0661***	-0.152***	-0.124***	-0.0917***	-0.134***	-0.102***	-0.140***	-0.0895***	-0.0960***	-0.114***
	(0.0254)	(0.0199)	(0.0280)	(0.0220)	(0.0189)	(0.0256)	(0.0180)	(0.0197)	(0.0153)	(0.0156)	(0.0158)
Δ own source revenues	-0.00164	0.0162***	0.0462***	0.00209	0.0204***	0.0496***	0.00391	-0.0476***	-0.0291***	0.0181**	0.00160
	(0.00772)	(0.00371)	(0.00804)	(0.00997)	(0.00747)	(0.00971)	(0.00705)	(0.0105)	(0.00909)	(0.00787)	(0.00772)
Own source t-1	0.00307	0.00641***	0.00979**	0.00896*	0.0122***	0.0145**	0.00491	-0.00544	0.00138	0.00477	-0.00328
	(0.00417)	(0.00219)	(0.00463)	(0.00544)	(0.00425)	(0.00568)	(0.00382)	(0.00569)	(0.00489)	(0.00426)	(0.00416)
Δ right	-0.0282	-0.0174	0.00623	-0.0812**	-0.0719***	-0.0502	-0.0550**	-0.0300	-0.0194	0.0117	0.0269
	(0.0251)	(0.0120)	(0.0260)	(0.0323)	(0.0242)	(0.0314)	(0.0228)	(0.0338)	(0.0294)	(0.0254)	(0.0250)
Right t-1	-0.0262*	0.00835	0.0187	-0.0334*	0.00501	0.00851	-0.00507	-0.0441**	0.00101	0.0356**	0.0266*
	(0.0143)	(0.00688)	(0.0155)	(0.0185)	(0.0138)	(0.0181)	(0.0131)	(0.0197)	(0.0169)	(0.0145)	(0.0142)
Observations	306	306	306	306	306	306	306	306	306	306	306

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure A5. Impact of a negative shock to exogenous revenues (-1.25 % of GDP) on five categories.



Note: 95% confidence intervals

Table A6. Impact of government partisanship on levels of own source revenues,

Models with province fixed effects and clustered standard errors. All independent variables are lagged.

	(1)	(2)	(3)
	DV: own sources revenues		
Lagged dependent variable	0.659***	0.661***	0.681***
	(0.0902)	(0.0906)	(0.0894)
Right	-0.395***		
	(0.108)		
Left		0.343*	
		(0.178)	
Centre			0.241**
			(0.0871)
Dependency	0.0528	0.0541	0.0515
	(0.0319)	(0.0305)	(0.0340)
Growth	0.0679**	0.0638**	0.0681**
	(0.0271)	(0.0278)	(0.0275)
Deficit	0.0206	0.0191	0.0297
	(0.0754)	(0.0732)	(0.0731)
Debt service	-0.00915	-0.00903	-0.00507
	(0.0344)	(0.0338)	(0.0364)
Employment rate	0.0532**	0.0448*	0.0491*
	(0.0213)	(0.0213)	(0.0222)
Service share	0.831	2.931	1.915
	(4.584)	(4.158)	(4.563)
Constant	-2.279	-3.637	-3.350
	(5.115)	(4.790)	(5.350)
Observations	340	340	340
R-squared	0.457	0.451	0.449
Number of provid	10	10	10

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A7. Within (wi)/between (bw) models of budget shares predicting relative redistribution.

	(1)	(2)	(3)	(4)
	Relative redistribution			
Lagged DV within	0.557***	0.576***	0.603***	0.574***
	(0.0511)	(0.0474)	(0.0438)	(0.0356)
Core bw	-0.103***			
	(0.0388)			
Core wi	-0.0671***			
	(0.0231)			
Health bw		-0.0470		
		(0.0984)		
Health wi		0.0686***		
		(0.0222)		
Education bw			-0.210	
			(0.198)	
Education wi			-0.00413	
			(0.0404)	
Social bw				0.0604
				(0.0505)
Social wi				0.0617**
				(0.0301)
Growth bw	-0.221	-0.788	-0.860	0.0862
	(0.650)	(0.844)	(0.864)	(0.471)
Growth wi	0.0463***	0.0523***	0.0594***	0.0631***
	(0.0147)	(0.0175)	(0.0154)	(0.0143)
Dependency wi	0.0994	0.0382	-0.0729	0.125***
	(0.0685)	(0.0597)	(0.142)	(0.0390)
Dependency wi	0.00958	0.0264	0.0199	0.0107
	(0.0242)	(0.0218)	(0.0261)	(0.0252)
Serviceshare bw	-25.98***	-18.63*	-30.82**	-26.74***
	(7.520)	(10.16)	(12.71)	(4.970)
Serviceshare wi	17.39***	17.58***	16.29***	16.69***
	(3.158)	(3.430)	(4.099)	(2.958)
Employmentrate bw	-0.399***	-0.359***	-0.395***	-0.420***
	(0.0598)	(0.0699)	(0.0605)	(0.0226)
Employmentrate wi	-0.142***	-0.164***	-0.149***	-0.154***
	(0.0203)	(0.0223)	(0.0209)	(0.0257)
Time trend	0.00786	0.00780	0.0336**	0.0393***
	(0.0122)	(0.0104)	(0.0149)	(0.0133)
Constant	85.92***	81.24***	101.7***	81.91***
	(8.500)	(7.761)	(22.16)	(6.562)
Observations	350	350	350	315
Number of provid	10	10	10	9