



The political and fiscal determinants of public health and curative care expenditures: evidence from the Canadian provinces, 1980–2018

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Abstract

Objectives Public health systems have been centre stage during the COVID-19 pandemic, but governments invest relatively little in public health as compared to curative care. Previous research has shown that public health expenditures are under pressure during recessions and could be politically determined, but very few studies analyze quantitatively their determinants. This study investigates the political and fiscal determinants of public health and curative care expenditures.

Methods After constructing a dataset building on disaggregated health expenditures in the Canadian provinces from 1975 to 2018, we use error correction models to study the short-run and long-run influence of fiscal and political determinants on public health expenditures and on curative expenditures. Fiscal determinants include measures of public debt charges and federal transfers. Political determinants include government partisanship and election cycles. We also explore whether curative expenditures crowd out public health expenditures.

Results We find no difference between left and right governments in curative care expenditures but show that left governments spend more on public health if we control for past spending decisions in favour of curative care. Fiscal austerity reduces both public health and curative expenditures, and provincial governments use additional intergovernmental transfers to increase their curative care budgets. A growth in the proportion of curative care relative to total health budgets is associated with a decline in public health expenditures.

Conclusion Even though they have low political salience, public health expenditures remain driven by partisanship and electoral concerns. Despite their widely acknowledged importance, public health programs develop in the shadow of curative care priorities.

Résumé

Objectifs Bien que les systèmes de santé publique aient occupé le devant de la scène pendant la pandémie de COVID-19, les gouvernements investissent relativement peu dans la santé publique par rapport aux soins de santé curatifs. Des recherches antérieures ont montré que les dépenses de santé publique sont vulnérables aux récessions économiques et pourraient être influencées par la politique, mais très peu d'études analysent quantitativement les déterminants des dépenses de santé publique. Cette étude examine les déterminants politiques et fiscaux des dépenses de santé publique et de soins curatifs.

Méthodes Nous avons assemblé une base de données regroupant les dépenses de santé désagrégées dans les provinces canadiennes de 1975 à 2018. Nous utilisons des modèles de correction d'erreurs pour étudier l'influence à court et long terme

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des déterminants fiscaux et politiques des dépenses de santé publique et des dépenses de santé curatives. Les déterminants fiscaux comprennent des mesures des intérêts sur la dette publique et des transferts fédéraux. Les déterminants politiques comprennent l'idéologie du gouvernement et les cycles électoraux. Nous examinons également si la croissance des dépenses curatives entraîne un effet d'éviction sur les dépenses de santé publique.

Résultats Nous ne trouvons aucune différence entre les dépenses en soins curatifs effectuées par les gouvernements de gauche et de droite, mais nous montrons que les gouvernements de gauche dépensent plus en santé publique si nous contrôlons pour les décisions passées en faveur des soins curatifs. L'austérité fiscale réduit à la fois les dépenses de santé publique et les dépenses en soins curatifs, et les gouvernements provinciaux utilisent les transferts intergouvernementaux supplémentaires pour augmenter leurs budgets de soins curatifs. Une augmentation de la proportion des budgets de santé alloués aux soins curatifs est associée à une baisse des dépenses de santé publique.

Conclusion Même si elles ont une faible saillance politique, les dépenses de santé publique restent guidées par la partisanerie et les préoccupations électorales. Malgré leur importance largement reconnue, les programmes de santé publique se développent à l'ombre de la priorité donnée aux soins curatifs.

Keywords Public health · Curative care · Political economy · Political parties · Canada

Mots-clés Santé publique · soins curatifs · économie politique · partis politiques · Canada

Introduction

Even though preventive measures have the potential to reduce mortality and the costs of health care, governments around the world invest a relatively small share of their total health expenditures in public health (Gmeinder et al., 2017; Hoffman et al., 2019). OECD (Organisation for Economic Co-operation and Development) governments spend on average 2.3% of their total health expenditures on public health. Canada, the focus of this study, is the OECD country spending the most on public health (Gmeinder et al., 2017). Nonetheless, in 2019, Canada spent about 7% of its total health expenditures from public sources on public health, in contrast to 63% of its health budget allocated to the three functions of curative care: hospitals (34.7%), drugs (8%), and physicians (20.7%) (CIHI, 2021).

Despite this modest level of financial support, public health systems have occupied centre stage in the wake of the declaration of the COVID-19 pandemic in March 2020. This crisis prompted renewed interest to ensure that public health was sufficiently funded (Fiset-Laniel et al., 2020; Rechel, 2019). The main contribution of this study is to explore the fiscal and political determinants of public health expenditures and compare them with those of curative care, using disaggregated health spending data by sector.

Public health improves “statistical lives rather than individual lives” (Hoffman et al., 2019) and cannot be associated with private benefits for individuals or groups. As such, it is a policy with a very low salience in public discourse, without an obvious supporting constituency (Tuohy & Glied, 2012). In addition, the benefits of public health expenditures unfold in the long term. Wary about responding to the demands of a myopic electorate, policy-makers are likely to prioritize expenditures beneficial in the short term (Jacques,

2021). In contrast, curative care addresses life-cycle risks; policies covering such risks benefit from broad popular support since everyone faces the risk of illness across their life course (Jensen, 2012). Hence, curative care is a particularly salient and popular “loud policy” (Busemeyer et al., 2020) that offers tangible, short-term benefits to broad segments of the population.

We analyze whether fiscal pressures are more likely to affect quiet public health than loud curative care expenditures. We also study crowd-out effects, to see whether the growth of the costs of curative care exerts a fiscal pressure on expenditures within and beyond the health sector. Existing studies do not find that growing health care costs crowd out other expenditures in Canada (Landon et al., 2006), but to our knowledge, no research has analyzed crowding-out effects *within* the health sector, that is between curative care and public health. Finally, we study the associations between curative care and public health expenditures and two political variables, government partisanship and the timing of elections.

Canada is a decentralized federal political system that confers large autonomy to provincial governments in the management of their health systems while allowing analysts to control naturally for several confounding factors. As such, Canadian provinces constitute an ideal laboratory for comparative policy analysis, notably to study partisan influence on public expenditures and policies (Imbeau, 2000). Provinces have comparable political institutions and party systems, while they have the fiscal, bureaucratic, and political capacity to make distinct policy choices (Jacques, 2020).

To our knowledge, this is the first quantitative analysis of the fiscal and political determinants of public health and curative expenditures in Canada. A related study described the evolution of public health expenditures in Quebec

(Fiset-Laniel et al., 2020). This article builds on previous research on public health financing from a comparative perspective (Allin et al., 2004) and on studies of the relationship between public health and curative care in different health care systems (Trein, 2017). Descriptive and quantitative studies of the determinants of public health expenditures have already been conducted in Europe (Rechel, 2019) and in OECD countries (Jacques & Noël, 2022).

Methods

We use the disaggregated health expenditures data from the Canadian Institute for Health Information (CIHI) National Health Expenditures Database (NHEX). CIHI aims to ensure the comparability of data provided by provincial governments and publishes disaggregated health expenditures from 1975 for each province. CIHI divides health expenditures into nine categories: hospitals, other institutions, physicians, other professionals, drugs, capital, administration, public health, and other health expenditures. Public health includes expenditures on food and drug safety, health inspections, health promotion activities, community mental health programs, public health nursing services, measures to prevent the spread of communicable diseases, and health in the workplace (CIHI, 2021).

To measure curative care spending, we sum expenditures on physicians, hospitals, and drugs. These three items consistently represent the largest health spending envelopes across provinces and relate to salient issues in Canadian health policy, such as access to a primary care doctor, long wait times for hospitals, and drug insurance costs (Marchildon et al., 2020).

Curative care and public health expenditures are expressed in Canadian dollars per capita, adjusted for inflation (measured in 2018 dollars). We consider only provincial government expenditures. Therefore, we have two dependent variables: (1) public health expenditures and (2) curative expenditures. We exclude the three territories due to data limitations and their distinct institutional and political situation within the Canadian federation. Descriptive statistics of all variables are presented in the Supplementary material, Appendix A.

We consider several fiscal and political indicators as independent variables. First, we use dichotomous variables to measure government partisanship, a common strategy in public policy analysis across provinces (Tellier, 2005). Following this literature, when the Conservative Party, the Saskatchewan Party, or the British Columbia Liberals are in government, the Right variable is coded as 1; when the New Democratic Party or the Parti Québécois are in power, the Left variable is coded as 1; the Centre variable is coded as

1 when the Liberal Party (except for the BC Liberals) forms the government.

Next, we consider several measures of fiscal pressures. First, we use a measure of fiscal expansion based on the provinces' cyclically adjusted budget balance, expressed as a proportion of GDP. A positive value signifies a fiscal expansion, while a negative value represents a contraction (Gosselin & Godbout, 2019). Unfortunately, we are unable to separate changes to the budget balance that are caused by a reduction in government spending, which creates pressure on health expenditures, from those caused by an increase in revenue, which alleviates pressure on expenditures. Data are available from 1981 to 2018 for most provinces, but only for shorter periods for Alberta (1999 to 2018), Nova Scotia, and Saskatchewan (2007 to 2018). Since this variable is available for fewer years in some provinces, we present models with and without its inclusion.

We use two other measures of fiscal pressures. First, interest payments on the public debt, a commonly employed measure of fiscal pressures on the current budget (Breunig & Busemeyer, 2012). Second, federal transfers, which are particularly relevant in the Canadian context as they influence the provinces' fiscal room (Jacques, 2020). Both measures are expressed as a proportion of GDP and are available since 1980 (Kneebone & Wilkins, 2016). In Supplementary material, Appendix C, we also present models where these variables are measured in per capita amounts. Unlike the budget balance, provinces have limited influence on these two variables. It is therefore pertinent to compare them with a variable that is more directly shaped by provincial decisions.

We also include a measure of the proximity to the next election. This allows to control for election years and the timing of elections, providing more information on the influence of elections than a dummy variable simply indicating that the election happens in a given year. Borrowing from Potrafke (2010), we measure proximity to the next election as follows:

$$\text{Election}_{it} = \frac{(M - 1) + d/D}{12}$$

where M is the month of the election, d is the day of the election, and D is the number of days in that month. In years without elections, the value is set to 0.

Finally, to model the crowd-out effects on public health expenditures, we use two approaches. First, we include the level of curative care expenditure per capita in our models. Second, we include a measure of curative expenditures as a proportion of total health expenditures from public sources in the previous year. The latter variable represents the curative orientation of the health care sector and assumes a fixed health care budget, whereas the former

measure allows governments to increase total health care budgets when curative care costs increase.

Our models also control for several confounding factors that could influence fiscal pressures and curative care or public health expenditures. These are the unemployment rate, the proportion of the population aged 65 and over, GDP per capita, and the premature mortality rate. We use logged values for all continuous variables.

Stationarity tests reveal that all dependent and independent variables are non-stationary, except for the measure of fiscal expansion since it is adjusted for seasonality. If non-stationary series are cointegrated, their linear combination is stationary. Pedroni and Westerlund tests reveal cointegration between most unit root variables. Thus, we use an error correction model (ECM), an econometric framework designed for non-stationary and cointegrated series (Philips, 2018). Stationarity and cointegration test results are presented in Supplementary material, Appendix B.

An ECM represents a dynamic specification of a dependent variable in first difference that includes both the lagged levels of the dependent variable and the lagged levels and the contemporaneous first difference of all explanatory variables as regressors. It allows us to derive both short-run (values differenced, stationary series) and long-run estimates (values in levels, non-stationary series).

Our ECM is represented in Eq. 1:

$$\Delta y_{it} = c_0 - \alpha(y_{it-1} - \theta x_{it-1}) + \beta \Delta x_{it} + \psi_i + \tau_{it} + \varepsilon_{it} \quad (1)$$

y_{it} represents the dependent variables in each province-year it . x_{it-1} is a vector of lagged independent variables. The coefficients in the parentheses are for long-run effects, captured by θ . The long-run effects can be interpreted as the percentage at which the respective expenditures will change in the long term given a change in the vector x . The parameter α is the speed-of-adjustment coefficient; it measures how quickly the expenditures return to the long-run equilibrium after a short-run shock. The coefficients β of the first differenced variables estimate the short-run effects of the independent variables. Finally, ψ_i is a province fixed effect, τ_{it} is a linear trend to account for expenditure growth overtime, and ε_{it} represents the error term. Fixed effects are warranted because of potential data discrepancies between provinces (Ammi et al., 2021) and supported by results of Hausman tests.

Results

Table 1 presents the results from the ECM. Models 1 and 2 are the baseline models with all covariates and the dependent variable represents public health or curative care expenditures. Models 3 and 4 add the fiscal expansion variable

at the cost of a shorter time series. Findings from models 1 and 2 reveal a partisan effect from left-leaning government for both types of health spending, in the short run. Effects are null for right-leaning governments. However, the impact of left-leaning governments disappears if we control for the fiscal expansion variable as indicated in models 3 and 4. The coefficient on the expansion variable indicates that a fiscal contraction (a negative value on the expansion variable) reduces both curative and public health expenditures. Interest payments lower curative spending in the long run, in model 2, but not when controlling for expansion in model 4. Federal transfers are positively associated with curative care in the short run in all models. A 1% increase in federal transfers leads to a small but statistically significant 0.04% increase in curative spending, on average. These models also show that proximity to the election is associated with higher public health and curative care expenditures.

Table 2 presents the crowd-out models using curative care as a proportion of total health expenditures in models 1 and 2 and the levels of curative care expenditures in models 3 and 4. Models 2 and 4 add the fiscal expansion variable. Models 1 and 2 indicate that the proportion of health budgets allocated to curative care is strongly and negatively associated with public health expenditures, in both the short and long run. Specifically, a 1% increase in the proportion of total health expenditures from public sources allocated to curative expenditures is associated with a 2.85% and a 1.88% decrease in public health expenditures, in the long and short run respectively. However, models 3 and 4 reveal that curative care expenditures are not associated with public health when considered only in levels. Left-leaning governments have a significant effect on public health expenditures, except in model 4. Our most conservative estimate is that left-leaning governments correspond to an expected increase of approximately 4% in public health expenditures when controlling for the proportion of the budget already allocated to curative care.

We conduct several robustness checks presented in Supplementary material, Appendix C. First, we model the crowd-out variable as curative expenditures as a proportion of total expenditures by excluding public health from the total (Table C.1). In these models, the crowd-out effect is observed only in the short term. Next, we find that the results are generally robust to keeping the covariates at $t-0$ in the long run (Table C.2). The only difference is that debt charges negatively influence public health expenditures in the short run under this specification.

We furthermore disaggregate the curative care expenditures variable into its components, specifically hospitals, physicians, and drugs spending per capita (Table C.3). In models without fiscal expansion, debt charges negatively influence physicians spending in the long run, while federal transfers decrease spending in drugs in the long run. Federal

Table 1 Political and economic determinants of public health and curative expenditures

	(1) Public health	(2) Curative	(3) Public health with fiscal expansion	(4) Curative with fiscal expansion
Long run				
Federal transfers _{<i>t</i>-1}	0.059 (0.470)	0.051 (0.058)	0.215 (0.514)	0.116** (0.051)
Debt charges _{<i>t</i>-1}	0.363 (0.266)	-0.064** (0.027)	0.790 (0.562)	-0.018 (0.056)
Proportion of population above 65 _{<i>t</i>-1}	-1.720 (1.092)	-0.600*** (0.136)	-2.377 (2.426)	-0.592*** (0.213)
GDP per capita (wealth) _{<i>t</i>-1}	0.798 (0.759)	0.813*** (0.111)	1.355 (1.548)	0.955*** (0.175)
Unemployment rate _{<i>t</i>-1}	-0.474* (0.287)	-0.405*** (0.084)	-0.292 (0.382)	-0.328*** (0.099)
Mortality rate _{<i>t</i>-1}	-0.526 (1.301)	-0.601*** (0.178)	0.726 (1.548)	-0.506** (0.203)
Error correction	-0.131*** (0.040)	-0.159*** (0.019)	-0.093* (0.048)	-0.149*** (0.023)
Short run				
Δfederal transfers	0.046 (0.074)	0.041*** (0.010)	0.045 (0.070)	0.046*** (0.007)
Δdebt charges	-0.037 (0.044)	0.005 (0.014)	0.052 (0.061)	0.011 (0.014)
Fiscal expansion			0.013** (0.006)	0.002*** (0.001)
Proximity to elections	0.003** (0.001)	0.001*** (0.000)	0.002 (0.001)	0.001*** (0.000)
Partisanship dummy, left	0.043* (0.022)	0.010* (0.006)	0.032 (0.027)	0.010 (0.009)
Partisanship dummy, right	0.017 (0.022)	-0.005 (0.005)	0.006 (0.017)	-0.003 (0.006)
Δproportion of population above 65	-0.889 (0.709)	0.448* (0.254)	-1.101 (0.750)	0.179 (0.301)
ΔGDP per capita (wealth)	0.214 (0.143)	0.163*** (0.040)	0.139 (0.192)	0.185*** (0.034)
Δmortality rate	-0.046 (0.099)	-0.033 (0.027)	0.074 (0.095)	-0.027 (0.026)
Δunemployment rate	-0.059 (0.059)	0.009 (0.013)	-0.105 (0.080)	0.022 (0.016)
Year	0.006*** (0.002)	-0.000 (0.000)	0.008*** (0.001)	0.000 (0.001)
Constant	-10.939** (5.558)	1.190 (1.153)	-15.831*** (3.239)	0.251 (1.149)
<i>N</i>	360	360	292	292
AIC	-593.26	-1606.34	-566.58	-1392.80

Robust standard errors in parentheses; * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Δ indicates variables that are first-differenced. Models (2) and (4) include the fiscal expansion variable, which is available only for a shorter period, hence reducing *N*. All variables are logged, except the three political variables containing lots of zeros and the fiscal expansion variable since it has negative values. Fiscal expansion is a measure of tax cuts and spending increases, expressed as a proportion of GDP, based on the cyclically adjusted budgetary balance. Debt charges are interest payments on the public debt as a proportion of GDP. Federal transfers are all intergovernmental transfers received by the province as a proportion of GDP

transfers positively influence hospital expenditures in the short run. No partisan effects are observed across models, while proximity to elections positively influences hospitals and drugs expenditures.

We also rerun our main models with interest payments on public debt and federal transfers as per capita amounts rather than as a proportion of GDP (Table C.4). In these models, federal transfers exert a strong and positive long-run effect on curative expenditures. An increase in debt charges negatively influences curative expenditures in the long run, similarly to the results found in model 2 of Table 1.

Since the expansion variable restricts the sample size to 292, we rerun models with this restricted sample without the inclusion of the fiscal expansion variable (Table C.5). In these models, we also find that partisan effects are null, which suggests that it is not the inclusion of the expansion variable that reduces the effect of partisanship, but rather

the smaller sample size. In fact, in our dataset, left governments are not more likely to pursue expansionary fiscal policies than right governments. Finally, the effects are robust to transforming the fiscal expansion into a dummy variable of large episodes of austerity coded 1 when the expansion is smaller than -0.5 and 0 otherwise (Table C.6).

Discussion

This article analyzes the fiscal and political determinants of curative care and public health expenditures, paying attention to the crowding-out effects of loud curative care expenditures on quiet and long-term oriented public health expenditures.

We do not find consistent associations between government partisanship and curative care expenditures. This is possibly because curative care is a visible policy supported

Table 2 Determinants of public health expenditures with curative expenditures represented as levels or shares of total health expenditures from public sources

	(1) With curative care as a share of total expenditures	(2) With curative care as a share of total expenditures and of fiscal expansion	(3) With levels of curative care	(4) With levels of curative care and fiscal expansion
Long run				
Curative as share of total health expenditures _{<i>t-1</i>}	-2.853*** (1.095)	-2.728*** (1.047)		
Levels of curative care expenditures _{<i>t-1</i>}			-0.263 (0.615)	0.122 (0.750)
Federal transfers _{<i>t-1</i>}	0.176 (0.370)	0.195 (0.500)	0.114 (0.445)	0.237 (0.450)
Debt charges _{<i>t-1</i>}	0.239 (0.232)	0.577 (0.450)	0.353 (0.282)	0.904 (0.627)
Proportion of population above 65 _{<i>t-1</i>}	-1.959** (0.959)	-2.459 (1.953)	-1.642 (1.292)	-2.846 (2.843)
GDP per capita (wealth) _{<i>t-1</i>}	0.867 (0.667)	1.191 (1.188)	0.917 (0.687)	1.680 (1.692)
Unemployment rate _{<i>t-1</i>}	-0.337 (0.283)	-0.299 (0.345)	-0.377 (0.278)	-0.648 (0.464)
Mortality rate _{<i>t-1</i>}	-0.758 (0.886)	0.075 (1.150)	-0.357 (1.312)	0.401 (1.393)
Error correction	-0.146*** (0.044)	-0.108* (0.058)	-0.132*** (0.040)	-0.088* (0.049)
Short run				
Δcurative as share of total health expenditures	-1.886*** (0.313)	-1.863*** (0.302)		
Δlevels of curative care expenditures			0.160 (0.524)	-0.536 (0.477)
Δfederal transfers	0.082 (0.065)	0.077 (0.070)	0.045 (0.068)	0.065 (0.073)
Δdebt charges	-0.045 (0.037)	0.044 (0.054)	-0.031 (0.040)	0.057 (0.059)
Fiscal expansion		0.010** (0.005)		0.014** (0.006)
Proximity to elections	0.003** (0.001)	0.002* (0.001)	0.003* (0.002)	0.003* (0.002)
Partisanship dummy, left	0.049*** (0.017)	0.040* (0.023)	0.042** (0.021)	0.035 (0.024)
Partisanship dummy, right	0.017 (0.018)	0.006 (0.012)	0.016 (0.024)	0.008 (0.018)
Δproportion of population above 65	-1.077* (0.607)	-1.130** (0.484)	-0.731 (0.820)	-1.271* (0.667)
ΔGDP per capita (wealth)	0.263** (0.118)	0.211 (0.166)	0.199 (0.160)	0.214 (0.222)
Δmortality rate	-0.074 (0.079)	0.035 (0.093)	-0.034 (0.092)	0.060 (0.081)
Δunemployment rate	-0.026 (0.051)	-0.061 (0.064)	-0.057 (0.059)	-0.101 (0.076)
Year	0.005*** (0.002)	0.007*** (0.001)	0.007*** (0.002)	0.006*** (0.002)
Constant	-6.909* (4.172)	-12.017*** (2.689)	-13.079*** (4.319)	-13.233*** (3.187)
<i>N</i>	360	292	360	292
AIC	-640.39	-620.72	-594.28	-572.49

Robust standard errors in parentheses; * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Δindicates variables that are first-differenced. Models (2) and (4) include the fiscal expansion variable, which is available only for a shorter period, hence reducing *N*. All variables are logged, except the three political variables containing lots of zeros and the fiscal expansion variable since it has negative values. Fiscal expansion is a measure of tax cuts and spending increases, expressed as a proportion of GDP, based on the cyclically adjusted budgetary balance. Debt charges are interest payments on the public debt as a proportion of GDP. Federal transfers are all intergovernmental transfers received by the province as a proportion of GDP

by most voters. Indeed, previous studies have found a cross-party consensus in Canada in favour of health spending (Jacques, 2020; Kneebone & McKenzie, 2001; Tellier, 2005). In contrast, we found some associations between government partisanship and public health expenditures. Public health may be seen as one of the instruments to reduce health

inequalities, which is aligned with the egalitarian orientation of left-leaning parties (Lynch, 2020). However, the left's capacity to invest in public health depends on the previous policy legacies regarding curative care. It is more difficult for governments to reorient scarce resources towards public health when health systems already favour curative care. Our

results reveal that for a given degree of health care system orientation towards curative care, left governments are associated with more public health expenditures.

Our findings contrast with expectations based on theories of political budget cycles (Philips, 2016) suggesting that governments prioritize curative care expenditures since they are tangible within a government's tenure, unlike invisible public health expenditures. We found, in fact, that both curative care and public health tend to increase before elections. This is consistent with the result of Potrafke (2010) who observed that health care expenditures in general tend to increase before elections.

Regarding fiscal pressures, one could have expected that fiscal contractions would be particularly detrimental to invisible public health expenditures: when governments implement austerity measures, they tend to target programs whose effects are diffuse and felt in the long run, like public health (Jacques, 2021). A descriptive study of European countries, for instance, observed a decline in public health expenditures following the Great Recession (Rechel, 2019), while a recent study of OECD countries concluded that public health expenditures are particularly vulnerable to austerity (Jacques & Noël, 2022). Within the province of Quebec, public health expenditures have decreased significantly during the 2015 austerity episode (Fiset-Laniel et al., 2020). We find, however, that fiscal contractions are related to reductions in both public health and curative spending. This may be because our measure of fiscal contraction is imperfect and includes both taxes and spending. Future studies should develop a new measure of fiscal policies that allows to disentangle the effects of spending cuts from tax increases in Canadian provinces.

Provinces support their health systems through their own-source revenues and through transfers from the federal government. These transfers must theoretically be invested in priority areas determined by the federal government, which are generally related to curative care, but in practice, provinces can decide to spend the money as they wish. We find that federal transfers are related to curative care, but not to public health. Interestingly, while governments use newly available federal transfer funds to invest in curative care, they also retrench curative care when transfers decline, presumably because they cannot cope with lower revenues without reducing their expenditures in the largest item of the health budget. Our results suggest that an increase in federal transfers could lead to an expansion of provincial hospital capacity, but it is unlikely to lead to a substantial increase in public health expenditures. Finally, interest payments on the public debt do not have consistent associations with public health or curative care.

We find some evidence that visible, and costlier curative care policies crowd out less visible public health programs. An increase in the proportion of health expenditures

allocated to curative care reduces the level of spending in public health, both in the short and in the long run. This suggests that if governments choose to limit the growth of the health care budget, allocating a larger share of health expenditures to curative care reduces the room to spend in public health. We do not find, however, that the level of curative care expenditure is associated with public health. We identify a crowding-out effect of curative care on public health only if we include a budget constraint in the health sector. If governments choose to increase the total health budget, the growth of curative care does not crowd out public health, although it might entail fiscal consequences elsewhere in the provincial budget. Governments have generally responded to rising health care costs by increasing health care budgets, leading to a growth of the proportion of provincial program expenditures allocated to health care, from an average of 27.8% in 1981 to 42.9% in 2018 (Kneebone & Wilkins, 2016). These rising health care costs may crowd out social policies that are particularly beneficial to population well-being (Dutton, 2020; Dutton et al., 2018).

Limitations

Our study is not without limitations. The first set of limitations relates to the nature of the data. Provinces do not define the health expenditure categories in the same way, especially regarding public health. Even if CIHI increases the comparability of the data, the NHEX dataset reports larger values than provincial budgetary estimates and the magnitude of the difference varies between provinces (Amami et al., 2021). However, these differences are relatively time invariant (Amami et al., 2021), which suggests that we can be confident regarding the results of our within-province analysis.

Moreover, drug coverage by public insurance varies widely across provinces, and we include drugs in curative care expenditures. Unfortunately, our dataset does not allow us to disaggregate expenditures by age categories, which would be useful since coverage for the population over 65 is more consistent across provinces. Finally, we recognize that we use a restrictive definition of public health, since our categorization does not include expenditures in other areas that affect the social determinants of health, such as most social policies (Dutton et al., 2018; McLaren & Dutton, 2020).

Conclusion

Despite their widely acknowledged importance for population health, public health expenditures receive less political attention compared to curative priorities. Public health expenditures are positively influenced by left-leaning

governments and in the lead-up to elections. Crowding out from curative expenditures also reduces public health expenditures, implying competition between health expenditures envelopes. Future research should consider refining public health expenditures estimates.

Contributions to knowledge

What does this study add to existing knowledge?

- The main contribution of this study is to explore the fiscal and political determinants of public health expenditures and compare them with those of curative care expenditures, using disaggregated health spending data by sector.
- We show that an established orientation towards curative care within the health budget crowds out public health expenditures. When we control for this institutional configuration, parties play a role, as left-wing governments appear more favourable to public health.
- Politically, we find no difference between left and right governments in curative care expenditures that are broadly supported by public demand.

What are the key implications for public health interventions, practice, or policy?

- If governments choose to limit the growth of the health care budget while allocating a larger share of health expenditures to curative care, the room to spend in public health will be reduced.
- Our results suggest that an increase of federal transfers could lead to an expansion of provinces' curative capacity, but it is unlikely to lead to a substantial increase in public health expenditures.

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Availability of data and material Data available upon request from the corresponding author.

Code availability Replication files available upon request from the corresponding author.

Declarations

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