Fiscal Sustainability and Diverging Fortunes in Atlantic Canada

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Abstract: Aging populations create significant economic and fiscal challenges for many Canadian provinces. But these pressures will be larger for some regions than others, and the outlook for Atlantic Canada may be particularly concerning. Using a detailed model of provincial budgets combined with the latest fiscal data, this paper quantifies the gap between program expenditures and revenues that each province will face in the coming decades, with a focus on Atlantic Canada. I find a notable difference between Nova Scotia and Prince Edward Island, which have a relatively favourable outlook, and New Brunswick and Newfoundland and Labrador, which do not. I conclude by exploring some fiscal policy reforms, both at the federal and provincial levels, to address these challenges and to help ensure long-run sustainable finances.

JEL classification: H7, H68, J18

Keywords: Debt Sustainability, Demographics, Regional Economics, Atlantic Canada

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1. Introduction

Canada's provincial governments face significant long-run fiscal challenges. Much of this stems from aging populations, which slow economic growth and increase healthcare spending. While all provinces face this pressure, the scale varies considerably, and the outlook for Atlantic Canada may be particularly concerning. After all, the pace of aging is higher in this region – especially so in Newfoundland and Labrador. But even within this region, there are important differences between each province's circumstances.

This paper explores these pressures by quantifying both the magnitude of each province's fiscal challenge and the potential options available to ensure sustainable public finances. Building on the methodology developed by Tombe (2020), combined with the latest data and projections, I estimate that the gap between provincial expenditures and revenues in the coming decades is significant but manageable. I also find a notable difference between Nova Scotia and Prince Edward Island, which have a relatively favourable outlook, and New Brunswick and Newfoundland and Labrador, which do not. Various fiscal reforms, including changes to federal transfers and provincial revenue and expenditure policies, are available to governments to address these long-run challenges.

To be sure, most recent attention on fiscal sustainability from the public and policy makers has tended to focus on the federal government. Unlike provincial governments, the federal government experienced a significantly larger increase in public debt during COVID-19 because of its role in providing emergency support to individuals and businesses. However, provinces were not spared. Economic disruptions affecting revenues combined with rising expenditures in healthcare and other support programs pressured provincial budgets and, importantly for this paper, did so unevenly across the country. Some, such as Newfoundland and Labrador and Alberta, saw particularly large increases in public debt, though still less than the federal government. Over the longer term, however, the federal government is in a relatively strong fiscal position, as revenues are expected to grow faster than program expenditures (Parliamentary Budget Officer [PBO], 2021; Tombe, 2020). The reverse is true for provincial governments.

Before proceeding, a brief description of what sustainable public finance means may be helpful. As governments do not face a specific end date when all outstanding debt must be repaid, the sustainability of public debt depends on a government's ability to carry and sustain that debt rather than on its ability to repay it. If the cost of servicing debt consistently rises faster than the public's ability to service it, then this is not sustainable. More specifically, if debt grows more quickly than the total income available to service it, then this is not sustainable.

Consider a situation where debt did increase faster than total income; so long as interest rates are positive, there would be some point in the future where debt service costs exceed all available income. Default would be mechanically unavoidable – and, of course, likely to occur long before that point was reached in any case. A useful metric to evaluate long-run sustainability is therefore the ratio of public debt to an economy's gross domestic product (GDP). If this ratio is stable over time, then fiscal policy need not be adjusted to remain sustainable. This is not a perfect measure, to be clear, but it is a useful one. It will form the basis of the analysis in this paper and builds on a large literature that does the same.

Concretely, this paper models provincial revenue and expenditure components over several multi-decade time horizons. It combines population and demographic projections, economic growth projections, and the latest fiscal policy developments and data with a rich model to project forward the path of provincial government public debt.

To the extent that debt to GDP ratios increase without bound, I further quantify what fiscal adjustment is required to change this path and ensure sustainability. That is, I estimate what immediate and permanent increase in revenue or decrease in program expenditures will stabilize debt ratios. This measure is normally called the "fiscal gap" (Auerbach, 1994) and provides a valuable measure of long-run fiscal challenges. Depending on the time horizon, I estimate approximately 2.5 percent of GDP for the Atlantic provinces overall. This is large – equivalent to an approximately eight percentage point increase to the HST. This measure is not a policy recommendation, though. An immediate and permanent fiscal policy change of this magnitude is unlikely to be optimal from the welfare perspective, but it provides a simple and transparent means of quantifying long-run financial challenges.

Importantly, I also find that the fiscal gap varies from a high of nearly five percent of GDP for Newfoundland and Labrador to a low of less than one percent of GDP for Nova Scotia. Prince Edward Island also has a relatively small fiscal gap. This potentially signals diverging fortunes between Atlantic provinces.

A significant driver of provincial fiscal gaps in Canada is the rapid pace of population aging. This naturally increases expected healthcare spending growth. After all, elderly individuals demand more frequent services delivered through provincial healthcare systems. Population aging also slow rates of economic growth as individuals withdraw from the labour force, which consequently lowers employment rates. Even if productivity per hour continues to grow at the post-financial-crisis rate of one percent per year, economic growth going forward will be lower than in Canada's recent past. This is particularly true among the Atlantic provinces, which face the prospect of greater population aging than the rest of Canada, and in some cases the out-migration of younger individuals exacerbates the challenge. Specifically, the analysis to come suggests that the Atlantic provinces may collectively see negligible overall population growth, and their overall pace of economic growth will be less than half what Canada as a whole may expect. Newfoundland and Labrador will face particularly acute challenges, with aggregate real GDP growth projected to be slightly negative over the coming decades.

Despite the potentially large scale of these fiscal challenges, there are options. Beyond estimating provincial fiscal gaps for provincial governments in Atlantic Canada, this paper goes further to explore some potential options, with a particular focus on federal-provincial transfers and what type of adjustments to fiscal arrangements and policy could help alleviate some of these pressures on provincial government. It demonstrates that the two dominant sources of fiscal pressure are provincial own-source revenues growing more slowly than overall economic growth and healthcare expenditures typically experiencing per capita growth beyond the general rate of inflation, even adjusting for demographic change.

Addressing these two challenges is more difficult for some provincial governments than others. Newfoundland and Labrador, for example, may see offshore resource revenue growth disappoint – though, much depends on future price and production levels. Changes in federal transfers can materially improve long-run fiscal prospects for the region, even at modest fiscal costs to the federal government. I show the particularly important value of reforms that make federal-provincial fiscal arrangements explicitly a function of demographics. Allocating the Canada Health Transfer based on the share of the population aged 65 and over – rather than the current equal per capita allocations – would decrease Atlantic Canada's overall 25-year fiscal gap by 0.5 percentage points. This is large.

This work contributes to an important literature focused on exploring future fiscal and economic challenges in Atlantic Canada. Most notable is, of course, the work of the Office of the Parliamentary Budget Office (PBO, 2021), which quantifies fiscal gaps for all provincial governments. Most recently, Fuss and Whalen (2021), Eisen, Whalen, and Palacios (2021), and the Atlantic Provinces Economic Council (2021) focus on Atlantic Canada and, consistent with my estimates in this paper, find aging populations are at the heart of the region's long-term challenges. This insight is not new, to be clear, and was previously explored by Mercenier and Mérette (2001), Busby, Robson, and Desjardins (2009), and others. Finally, potential policy

reforms to federal transfer arrangements, in particular the Canada Health Transfer (CHT), were studied specifically by Mou (2021), Béland and Tombe (2021), Marchildon and Mou (2014), and others, and the importance of healthcare spending restraint was highlighted by Robson (2020) and many others.

This paper adds to this literature by incorporating the latest economic and fiscal information and projections and features a significantly more detailed model of provincial budgets. Broadly, my results are consistent with conclusions reached by others in some ways – namely, that demographic pressures create significant long-run fiscal challenges, and reforms to provincial fiscal policy (i.e., reforms to mitigate healthcare expenditure growth) and federal transfers (i.e., making them more sensitive to demographics) are important to consider. A novel result of my analysis is highlighting the notable differences between Newfoundland and Labrador and New Brunswick on the one hand and Nova Scotia and Prince Edward Island on the other. The latter two provinces have significantly smaller fiscal gaps — indeed, I find Nova Scotia's gap is materially below the overall Canadian average for provincial governments.

I begin the analysis by exploring detailed data and projections of provincial demographics and quantify the potential effect of this on healthcare expenditures. I then turn to the effect of demographics on economic growth in the region. These two factors receive more attention than other budget components, given their importance for long-run fiscal sustainability.

2. Population Aging and Healthcare Expenditures

An aging population will have countless implications for Canada in general and its economy in particular. For provincial budgets, two issues stand out: healthcare expenditures and economic growth rates. I explore these two issues below.

2.1 Healthcare Expenditures

Canada's population is aging, rapidly so in some provinces. Currently, approximately one in every five Canadians is over the age of 65. Over the coming two decades, that will gradually and consistently rise to potentially as much as one in four. Among the Atlantic provinces, however, this share may approach one in three. This is a significant increase over the current share of just over 20 percent.

I display the latest population projections from Statistics Canada in Table 1. To illustrate the magnitude of potential uncertainty, I report the smallest and highest projected shares of each province's population aged 65 and over across a range of projection scenarios.

Not all provinces are aging at the same pace. Newfoundland and Labrador may experience the fastest pace of aging while Prince Edward Island tracks only modestly above the national average.

TABLE 1. Projected Population Share Aged 65+, by Region

	Year			
	2025	2030	2035	2040
Newfoundland and Labrador	25-26%	28-30%	30-33%	31-35%
Nova Scotia	24-25%	26-28%	27-30%	26-31%
Prince Edward Island	22-23%	23-26%	23-27%	23-28%
New Brunswick	25-26%	27-29%	28-31%	28-32%
Atlantic Provincial Average	24-25%	27-29%	27-31%	27-32%
Canadian Average	20-21%	21-23%	22-25%	21-26%

Source: Author's own calculations from Statistics Canada Table 17-10-0057-01.

Note: The range of population shares reflects the lowest and highest shares across all projection scenarios.

These age-specific expenditures combine with demographic projections to forecast where provincial government health expenditures are pointed. Specifically, a province's overall healthcare spending per capita h_i is the population-weighted average per capita spending across each age cohort h_i^c. Projections for the share of a province's population accounted for by each age cohort p_{it}^c can be used to forecast future overall per capita spending based on the following expression:

$$h_{it} = \sum_c p_{it}^c h_{i0}^c, \tag{1}$$

where h_{i0}^c is the current age-specific spending.

In addition to population pressures, the unit cost of individual healthcare services tends to rise more rapidly than overall prices throughout the economy. This is not unique to healthcare but is a potential feature of service prices in general. For healthcare, though, I infer this from changes in inflation-adjusted fixed-demographics expenditures:

$$\sum_c p_0^c h_{it}^c. \tag{2}$$

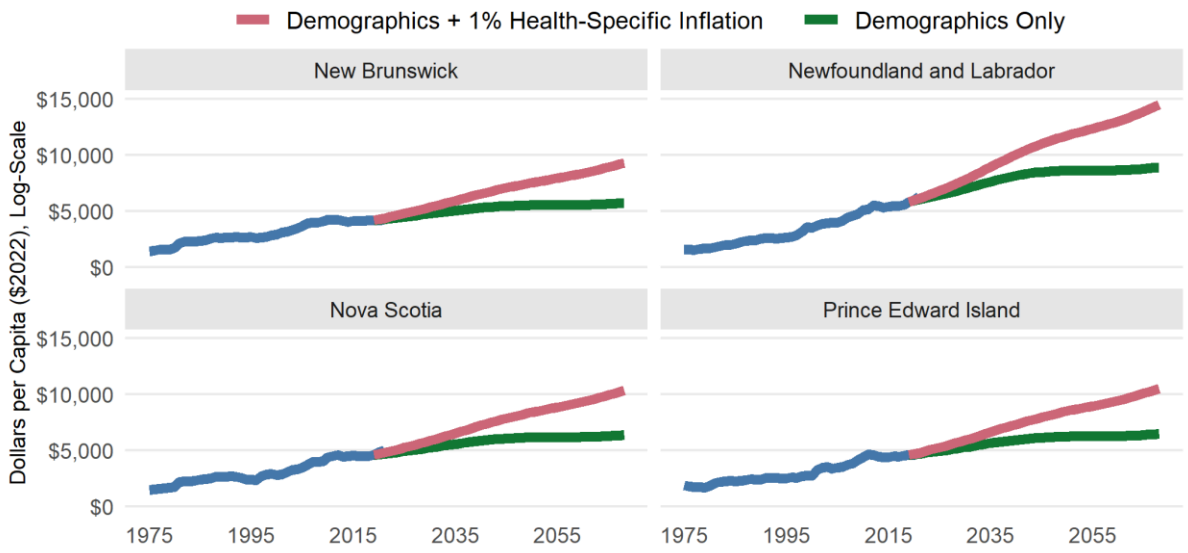
Formally, this is like a price-index where the "price" is real per capita health spending by age, and the "quantity" is the underlying population by age. Holding fixed the population, changes will reflect what I will call health-specific inflation. From 2009 to 2019, this was approximately zero in Canada – suggesting no incremental increase in healthcare expenditures beyond general

inflation, population growth, and demographic change. But in the ten years from 2000 to 2009, this measure increased by an average annual rate of 2.6 percent. For the baseline projections used in this paper, I assume a one percentage point additional growth rate for healthcare service prices.

To be clear, such projections are not inevitable and depend on provincial policy choices in several ways. Reforms and improvements to healthcare delivery may lower per capita expenditures in certain age groups. Increases in the use of home care, for example, might be such a reform due to hospital expenditures being such a large share of total healthcare expenditures. These projections, though, illustrate an important area of pressure on provincial budgets such that if nothing else changes, then healthcare costs will indeed rise because of aging.

The analysis suggests expenditure increases are significant. I illustrate this in Figure 1. The actual level of per capita inflation adjusted health spending is illustrated in blue up to 2019. In green, I illustrate the projection of what that health spending would be if only demographic pressures were modelled. Roughly speaking, this increase is equivalent to approximately 1 to 1.5 percent of GDP among the Atlantic provinces. In addition, in red, I illustrate the increase along with a one percentage point increment to healthcare expenditure growth to reflect price increases specific to this sector.

FIGURE 1. Actual and Projected Provincial Health Expenditures



Source: Author's own calculations from CIHI (Canadian Institute for Health Information) health spending data and population projections based on provincial projections (Oct 2019) during the period 2019 to 2041 and extrapolated beyond with national Statistics Canada M2 scenario (17-10-0057-01).

Overall, this analysis suggests that a roughly 2.5 percentage point of GDP increase in provincial healthcare spending over the next two decades is set for Canada as a whole. In comparison, the Atlantic provinces appear on track for a 4.5 percentage point of GDP increase. This is a materially larger fiscal challenge and not an evenly distributed one. Newfoundland and Labrador in particular faces notable challenges because of its higher rate of aging. These results suggest this province may see a 40 percent increase in real per capita health spending by 2040.

2.2 Slowing Economic and Revenue Growth

There are also fiscal challenges on the revenue side of provincial budgets. As with population aging, these pressures will affect some Atlantic provinces more than others.

First, population aging slows the anticipated pace of economic growth. As individuals retire and exit the labour force, employment will represent a smaller share of the total population. This will slow the rates of per capita GDP growth, even if the GDP per worker growth continues to increase at its historic pace. This is best seen in an expression that connects average per capita GDP in a particular province y_i with that province's labour productivity A_i and employment rate e_i. Specifically, $y_i = A_i e_i$, and therefore we can determine growth rates using the following:

$$g_{y_i} = g_{A_i} + g_{e_i}. \tag{3}$$

If all regions experience similar labour productivity growth g_{A_i}, then differences in overall per capita are driven entirely from differences in employment rate changes g_{e_i}. Demographic projections can provide one approach to quantifying this. Presuming age-specific employment rates remain constant, the changing population weights for each cohort will pin down the overall average employment rate e_i for each province, and aggregate rates of overall (real) GDP growth will simply be $g_{y_i} + g_{p_i}$, where g_{p_i} is a province's overall population growth.

In Atlantic Canada, slower population growth and faster population aging are substantial drags on potential future economic growth. Based on a one percent per year average annual growth in labour productivity, combined with the Statistics Canada demographic projections described earlier, I report the forecast growth rates of provincial economies and overall populations in Table 2.

This analysis suggests Atlantic Canada overall may experience 0.3 percentage points slower growth in real GDP per capita through to 2040. Combined with a 0.8 percentage point slower rate of population growth, average aggregate real GDP growth may be nearly half what is observed nationally. The gap is particularly large for New Brunswick and Newfoundland and Labrador. Prince Edward Island and Nova Scotia, meanwhile, are projected to have overall growth rates closer to or, in the case of PEI, above the national average.

TABLE 2. Projected Average Annual Growth Rates 2019-2040, by Region

	Real GDP per Capita	Population Growth	Aggregate Real GDP
Newfoundland and Labrador	0.4%	-0.5%	-0.1%
Nova Scotia	0.8%	1.1%	1.9%
Prince Edward Island	0.8%	0.2%	1.0%
New Brunswick	0.7%	0.2%	0.9%
Atlantic Provincial Average	0.6%	0.1%	0.7%
Canadian Average	0.9%	0.9%	1.8%

Source: Author's own calculations from Statistics Canada Table 17-10-0057-01.

Note: The results presume an average annual growth in labour productivity of one percent.

Slower growth rates are a challenge for debt sustainability. For reasons we will explore shortly, how interest rates compare to economic growth rates matters crucially for the sustainability of public debt over the long run. More intuitively, economic growth rates translate directly into the pace of provincial revenue growth. After all, if employment rates are declining due to population aging and increasing retirements, then that may place pressure on income tax revenues. To be clear, as with healthcare expenditure growth, such projections are not inevitable. Policy will matter at the margin to help boost these rates of growth. Efforts to attract younger individuals could be especially important.

In addition to broad-based pressure from slower growth, Newfoundland and Labrador faces particularly acute revenue challenges from potential declines in offshore oil production. Revenue from such production is, of course, an important source of revenue for that province. Based on the latest projections from the Canada Energy Regulator's Energy Future report for 2021, this production is soon going to decline significantly (Canada Energy Regulator [CER], 2021). From a 2023 level of approximately 300,000 barrels per day in production, the CER expects production to fall nearly in half by 2040 and to fall by 90 percent to just over 30,000 barrels per day by 2050. Under a scenario where global action on climate change and fossil fuel use increases – in what they call an "Evolving Scenario" – the CER expects production to be less than 70,000 barrels per day by 2040 and nearly zero by 2050.

3. A Method to Quantify Long-Run Fiscal Challenges

While there are countless other components of provincial budgets that must be projected to quantify long-run fiscal conditions, I leave those details to interested readers to explore in Tombe (2020). This paper does not introduce structural changes to the underlying model of provincial budgets. In this section, I therefore present only a brief discussion of the method used to quantify long-run fiscal challenges in this report.

Long-run public debt sustainability is principally concerned with whether the future growth of total debt obligations exceeds the growth of a government's overall ability to carry and service this debt, normally measured in terms of the size of a jurisdiction's economy. The ratio of debt to GDP is therefore a natural measure. If a government's debt to GDP ratio is growing without bound, then this is unsustainable.

Projecting the potential future path of public debt is a complex exercise, but at its core such projections depend on a government's expected primary budget balance, future interest rates, and future economic growth rates. None of these components are known with certainty, but reasonable forecasts and scenarios can be constructed.

As we've seen, future revenues and expenditures may be projected forward based on expected future increases or decreases in the size of various tax bases or cost pressures. Economic growth rates can be projected using demographic forecasts and assumptions around future productivity growth. Interest rates may also be inferred from financial markets. With these measures in hand, future fiscal variable – measured as a share of GDP – can be expressed in present value terms using an effective discount rate of

$$\varphi_t = \prod_{s=1}^{t} \left(\frac{1+r_s}{1+g_s}\right). \quad (4)$$

If a government's debt ratio starts at d_0, for example, then it will become $\varphi_T \times d_0$ after T years.

In addition to current debt ratios affecting future debt ratios, a government's future revenue and expenditures also matter. A primary balance in year t affects future debt according to $-\varphi_T p_t/\varphi_t$. Positive balances are surpluses that subtract from future debt, and negative balances do the reverse. This expression is more intuitive than it may at first appear. The primary balance at some future time t is equivalent to an initial debt ratio of $-p_t/\varphi_t$, and as with initial debt this affects future debt by φ_T. Putting all this together yields

$$d_T = \varphi_T d_0 - \varphi_T\left(\sum_{t=1}^{T} p_t/\varphi_t\right). \quad (5)$$

Using this expression, along with underlying projections for government primary balances, I formulate a projection for each Atlantic province. What remains is to project forward growth rates of revenues and expenditures. The full methodology is described in Tombe (2020), though the preceding sections illustrate the importance of demographics and healthcare expenditures in constructing this projection. In terms of key macroeconomic variable, I presume all provinces face a four percent borrowing rate and labour productivity growth equals one percent.

4. Main Results and Long-Run Fiscal Gaps

Before presenting the full results in terms of future debt to GDP ratios, it is worth appreciating the underlying components of debt changes attributable to different revenue and expenditure categories.

The effect of initial debt levels on future debt depends only on φ_T, as is clear in the above expression. However, the primary balance p_t depends on the projected level of revenues from all sources, which can be separated into categories such as personal income taxes, corporate income taxes, general sales taxes, federal transfers, natural resource revenues, and so on. Similarly, program spending can be decomposed into health expenditures, primary and secondary education, post-secondary education, and so on.

The second term in the above expression – which I will call the primary gap – can therefore be split into each individual category. I display the results of this exercise in Table 3 below. Importantly, I report this gap in present value terms, which is the (negative of the) second term in the expression divided by φ_T. This allows the results to be interpreted in magnitudes equivalent to a certain percentage of GDP in 2019 (the start of the projection model).

Consider Newfoundland and Labrador first. The primary gap over a projected 25-year time horizon contributes 49 percentage points of net debt to GDP, which is significant. It implies the projected magnitude of the imbalance between revenues and expenditures over this horizon is roughly equivalent to the province's entire debt stock in 2020/21.

Perhaps surprisingly, given Newfoundland and Labrador's significant projected population aging, this result is not driven by unusually large health expenditures relative to the other Atlantic provinces. Indeed, while the 189 percent of GDP is higher than the national average, it is the lowest among the Atlantic provinces. Instead, the particularly large challenge results from two factors: low expected taxation revenues, which could be due to demographics, and low federal transfers, which are due to the province not receiving equalization payments in this projection.

TABLE 3. Components of Primary Gaps (25-Year Horizon)

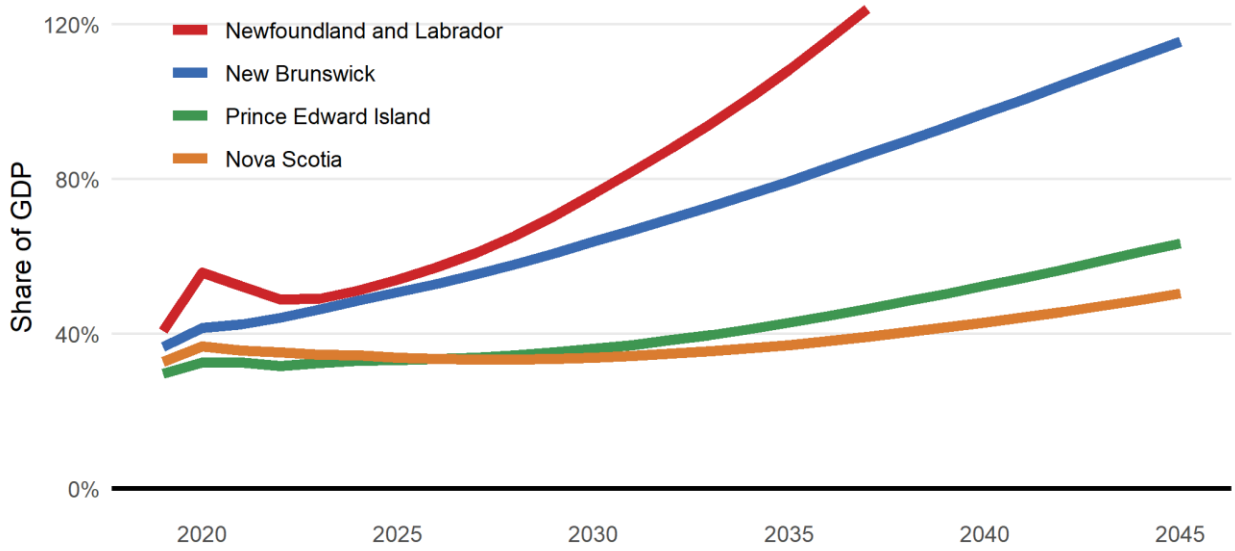
	Expenditures			Revenue			Primary Gap
	Health	Education	Other	Taxes	Transfers	Other	
Newfoundland and Labrador	189%	65%	191%	180%	94%	111%	60%
Prince Edward Island	241%	116%	295%	280%	272%	84%	16%
Nova Scotia	222%	104%	188%	247%	195%	74%	-2%
New Brunswick	199%	90%	255%	231%	206%	85%	23%
Atlantic Provincial Average	207%	90%	215%	225%	175%	88%	24%
Canadian Average	167%	81%	174%	231%	74%	89%	25%

Another part of the challenge for Newfoundland and Labrador, though one not evident in Table 3, is the declining resource revenues expected for the province. The "other revenues" include

offshore royalties, which is why Newfoundland and Labrador benefits from significantly larger revenues in this category (equivalent to 111 percent of GDP today) than the other Atlantic provinces, which have limited access to natural resource revenues. With declining resource revenues currently expected for the province, other revenues may fall sort. To be clear, this is highly uncertain. The recent approval of Bay du Nord and other related projects, for example, may substantively improve Newfoundland and Labrador's long-run prospects (Tombe, 2022).

Other Atlantic provinces are in a comparably stronger position, even compared with the Canadian national average. Even including Newfoundland and Labrador, the projected primary gap of 24 percent of GDP is lower than the national average of 25 percent. Importantly, however, this does not imply that the long-run sustainability challenge is lower for these provinces than elsewhere, just that the primary gap is not the critical factor. Instead, slower rates of economic growth tend to make φ_T higher, and therefore future debt levels will be higher even for slightly lower values of the primary gap. In addition, current debt will grow relatively more than for other provinces in the future as interest rates may (and are projected to) exceed economic growth rates.

FIGURE 2. Provincial Government Net Debt to GDP Ratios



Note: Figure 2 displays the projected net debt to GDP ratios for the Atlantic provinces.

To illustrate the projected future path of debt, I plot d_t through to 2045 for each Atlantic province in Figure 2. Recall that sustainable finances imply a stable debt to GDP ratio. The differing long-run prospects for different provinces is clear.

Both Nova Scotia and Prince Edward Island have relatively flat debt trajectories over the coming decade, though they rise from there. New Brunswick and Newfoundland and Labrador, however,

see consistently rising debt levels. This would not be sustainable absent fiscal policy reforms either by those provincial governments or through change in federal transfers, as I will explore in a later section. First, I report an important summary statistic of long-run fiscal challenges. As discussed, a stable net debt to GDP ratio is sustainable in the long run. To the extent that $d_T > d_0$, an adjustment to increase revenues or decrease expenditures will be necessary.

There are potentially countless ways in which this adjustment could occur, each with different policy instruments and timelines to enact them. But without taking a stand on what optimal policy may or may not be, a simple metric to quantify the magnitude of long-run fiscal adjustments is the immediate and permanent increase in revenues or decrease in expenditures as a constant share of GDP. That is, a fiscal adjustment of one percent of GDP required to achieve $d_T = d_0$ implies raising revenues or decreasing spending by that amount in each year until time T relative to the baseline projection for p_t. This is generally referred to as the fiscal gap. To ease intuition, if $r = g$ and therefore $\varphi_t = 1$, the fiscal gap is equal to the simple average primary deficit $f = -\sum_{t=1}^{T} p_t/T$.

The long-run fiscal gap varies considerably across provinces and orders of government in Canada. I report the results in Table 4. Among the Atlantic provinces, Nova Scotia has the strongest position. Its fiscal gap over a 25-year horizon is 0.6 percent of GDP. This means that to ensure net debt levels by 2044 are no higher than in 2019, provincial revenues need to increase or program expenditures need to decrease by the equivalent of 0.6 percent of GDP – approximately two sales tax points.

Prince Edward Island follows with a fiscal gap of 1.2 percent of GDP. Both provinces are below the national average among the provinces. Newfoundland and Labrador, however, has a relatively large fiscal gap: 4.7 percent of GDP over a 25-year horizon, rising to nearly 6 percent over a 50-year horizon. This is the highest gap among provincial governments and is roughly three times larger than the overall average for the provinces.

I also report the fiscal gap for the federal government, as reforms to federal transfers are an important part of the policy debate in Canada. The negative fiscal gap for this order of government implies there is long-run fiscal capacity to decrease revenues or increase expenditures without risking unsustainable federal finances. An alternative approach to compare long-run government finances is to simply plot the debt trajectory over time.

In Figure 2, I illustrate this for each of the four Atlantic provinces. The stark difference between Newfoundland and Labrador and New Brunswick compared to Prince Edward Island and Nova Scotia is clear. I project that the former two provinces will exceed 80 percent net debt to GDP within approximately one decade. The latter two provinces, meanwhile, have a relative flat trajectory over that same horizon. The fiscal necessity to bend debt trajectories to a sustainable path is clear.

TABLE 4. Long-Run Fiscal Gaps

	Time Horizon			
	25 Years	50 Years	75 Years	100 Years
Newfoundland and Labrador	4.7%	5.9%	6.1%	6.1%
Prince Edward Island	1.2%	1.5%	1.3%	1.0%
Nova Scotia	0.6%	0.8%	0.6%	0.4%
New Brunswick	2.6%	2.4%	2.0%	1.6%
Atlantic Provincial Average	2.3%	2.6%	2.4%	2.1%
Canadian Average	1.5%	1.7%	1.6%	1.4%
Federal Government	-0.3%	-1.6%	-2.8%	-3.8%

Before exploring several policy options, the sensitivity of these results to alternative assumptions is worth appreciating. These results should not be viewed as predictions, as any number of unforeseen and unforeseeable developments will affect future economic and fiscal developments in each of these provinces. Instead, this analysis quantifies what the long-run implications of current policies may be, given reasonable assumptions of where economic fundamentals go from here. Illustrating a range of potential fiscal gaps under alternative assumptions is possible and valuable.

Consider changes in labour productivity. If real output per worker increases at an average of 1.5 percent per year, instead of the baseline assumption of one percent in line with historical experience, then Atlantic Canada's fiscal gap declines by 0.8 percentage points to 1.4 percent over a 25-year horizon. Over a 50-year horizon, the fiscal gap declines significantly to only 0.6 percent. To be sure, an increase in labour productivity growth to 1.5 percent is an enormous increase but nonetheless effectively illustrates the sensitivity of the main results to this model parameter. Decreases in productivity growth come with a similarly significant deterioration in the region's fiscal gap. For the Atlantic provinces as a whole, the fiscal gap rises to 3.1 percent over a 25-year horizon and to 4.3 percent over a 50-year horizon.

Consider also differences in the region's demographic profile and pace of aging. The population projections used in the analysis are from Statistics Canada, which reports several alternative future paths. In their "slow aging" scenario, for example, the share of Atlantic Canada's population over the age of 65 is projected to be roughly one-quarter by 2040, instead of roughly 30 percent. This scenario leads to a 0.2 percentage point reduction in the 25-year fiscal gap and a 0.5 percentage point reduction in the 50-year fiscal gap. At the other extreme, in the "fast aging" scenario where the population age 65 and over is roughly one-third by 2040, the fiscal gap increases by 0.1 percentage points over a 25-year horizon and by 0.4 percentage points over a 50-year horizon.

Policies or developments that can increase the number of younger individuals that move to the region can have particularly large effects on the future fiscal trajectory of provincial

governments. This is particularly relevant following COVID-19, given the growing potential for locations outside major global metropolitan centres to capitalize on remote work and similar technological and societal developments.

There are also potentially significant near-term economic or global policy developments that can positively or negative affect the fiscal gaps of particular provinces. Newfoundland and Labrador presents a stark illustration of this point, given the importance of offshore resource development – and the resulting resource revenues – for the provincial budget. As discussed previously, the Bay du Nord project may potentially arrest the anticipated decline in – and potentially increase – future offshore oil production. This will create higher natural resource revenues for Newfoundland and Labrador and therefore lower their long-run fiscal gap.

Though several critical uncertainties remain (not the least of which is the lack of a final investment decision being taken by the firm at the time of writing), recent analysis by Tombe (2022), based on a similar model as used in this paper, finds that new production from Bay du Nord and other potential projects in the area may decrease Newfoundland and Labrador's 25-year fiscal gap by 1.4 percentage points. Negative future developments for offshore production are also possible, however. The Canada Energy Regulator's Energy Future Report (2021), which is at the core of this paper's resource revenue projection, includes a scenario featuring increasingly stringent climate policy within Canada and globally. In this "evolving scenario," the price of oil and gas commodities is materially lower, as is the projected path of future oil production. The implications for Newfoundland and Labrador are potentially significant. I estimate this province's 25-year fiscal gap increases by 0.9 percentage points in this scenario.

Recognizing that any specific estimate of long-run fiscal challenges is subject to uncertainty, it is difficult to conclude that – like almost all provinces in Canada – the Atlantic provinces will be spared difficult future fiscal choices. Early action to ensure provincial finances are sustainable in the long run will lower the cost and more efficiently smooth it over time. Policy options are therefore important to consider.

5. Selected Policy Options

Though the long-run fiscal challenges for provincial governments are potentially large, there are several options available to significantly mitigate the challenge in some cases or eliminate them entirely in others. I focus on two areas: federal transfers and provincial fiscal policy.

5.1 Federal Transfer Reforms

Currently, Canada has nearly the highest degree of structural equality in federal provincial transfers of any point of Canadian history in terms of their per capita allocation across provinces (Tombe, 2018). This contrasts with the unevenly distributed future challenges (particularly due to demographics) across provinces. There is therefore potential scope to fruitfully examine transfer reforms.

Consider a simple reform at first: increasing the rate of growth of the Canada Health Transfer (CHT). This is a common request by provincial Premiers and is the occasional proposal during

federal election campaigns. Most recently, the Conservative Party of Canada proposed increasing the CHT growth rate to six percent per year (approximately two percentage points more than the baseline projection) for a period of ten years. In my projection, I find that federal transfers as a share of overall provincial healthcare expenditures decline by five percentage points, reaching 17 percent by 2050. Increasing the pace of CHT growth therefore may be an appealing option. If we grow the CHT at an additional one percentage point per year, the 25-year fiscal gap for the Atlantic provinces falls by 0.3 percentage points of GDP. Though small relative to the total gap, this is a large amount – equivalent to revenues that would result from an approximately one percentage point increase to the HST for those provinces. Increasing the growth rate by two percentage points, the region's overall fiscal gap declines by 0.6 percentage points of GDP.

Instead of growth rate increases, allocation rules may deliver greater effects. Consider a simple reform that would allocate CHT according to the share each province accounts for of the overall population of individuals aged 65 and over. This would involve no additional aggregate cost to the federal government but would affect who receives the CHT dollars. With this reform, the Atlantic Canada fiscal gap declines by 0.5 percentage points of GDP. Allocating CHT payments according to the provincial share of Canada's elderly population is a very simple rule; there are more complex options that reflect the detailed provincial age-specific health spending patterns (Béland and Tombe, 2021). But the quantitative difference between these options in terms of long-run sustainability effects may not warrant the added complexity.

Turning to another major federal transfer program, reforms to equalization may be particularly important for Newfoundland and Labrador. Currently, this is a transfer program that is important for all provinces with below average levels of fiscal capacity per capita. However, for Newfoundland and Labrador, the prospects of receiving a payment under the program – at least until early in the 2040s according to this baseline projection – are slim. With certain reforms, it would be possible for that program to deliver transfers sooner. Excluding resource revenues from the calculation would reduce the province's 25-year fiscal gap by 0.9 percentage points.

There are important trade-offs to consider with such a reform, to be clear, so I report here only the mechanical effect. But the need for at least a deep reconsideration of certain aspects of the equalization program is almost undeniable following the release of the 2022/23 payment details.[1] Without going into a detailed exploration of this issue, the problem concerns how the fiscal capacity cap and adjustment payments interact. Consider Saskatchewan. The fiscal capacity cap for that province clawed back more than the $794.4 million the province would have received if resource revenues were excluded, and therefore the province received no payment. This claw back, though, was only a tiny $4 million higher. I estimate that if Saskatchewan's non-resource fiscal capacity was a mere 0.05% smaller – less than the normal data revisions that will happen next year – then it would have received some equalization payments. But so too would Ontario because of the effect of adjustment payments. In fact, if oil prices were just 60 cents per barrel lower in 2020, I estimate Ontario would have received a $1.1 billion equalization payment for 2022/23. The possibility of tiny changes in fundamentals leading to large changes in payments is a less than desirable feature of the program and may motivate future reforms.

[1] I thank Finance Canada staff for generously providing me with the equalization worksheets.

5.2 Provincial Fiscal Policy Reforms

While federal transfers have always served an important role in Canadian federalism and provincial fiscal sustainability, there are many important actions that provincial governments can take to ensure a sustainable future.

On the revenue side, provincial governments generally have revenues that grow more slowly than overall nominal GDP. The Atlantic provinces are no different. This results from taxation revenues accounting for approximately half of total revenues, and some federal transfers – such as the Canada Social Transfer – growing at a fixed rate of three percent per year. If total provincial own-source revenues were instead to grow with the overall rate of economic growth (that is, if the provincial revenue share of GDP was constant), then much of the long-run fiscal gap would be filled. I estimate the 2.3 percent of GDP fiscal gap over a 25-year horizon for the Atlantic provinces overall would decline to 0.6 percent. New Brunswick would still face a relatively large gap of 1.8 percent of GDP, but over a 75-year horizon this falls to 0.2 percent of GDP even for this province. And Newfoundland and Labrador, while facing the largest initial challenge, sees its fiscal gap decline to 0.3 percent of GDP over a 25-year horizon.

To be clear, this does imply offsetting any future decline in natural resource revenues from offshore oil production with other revenues, which is no easy feat. These results imply that gradual and sustained action – such as adjusting tax rates, fee schedules, markups, and so on – to ensure own-source revenues keep pace with economic growth addresses most of the fiscal sustainability challenge for these provinces.

On the expenditure side, lowering the growth of healthcare expenditures is an important factor to achieve long-run sustainability. Consistent with historical experiences of provincial governments, the baseline projections include healthcare costs that increase with population, inflation, demographics, and a one percentage point per year healthcare-specific price growth. If this health-specific inflation was eliminated, and real per capita by age cohort expenditures remained fixed, then the 25-year fiscal gap facing the Atlantic provinces would decline from 2.3 percent to 0.9 percent of GDP. Newfoundland and Labrador would face a 3.4 percent of GDP gap, New Brunswick would face a 1.3 percent gap, and both Nova Scotia and Prince Edward Island would have modestly negative fiscal gaps.

6. Concluding Remarks

There are a wide variety of combinations on both the revenue and the expenditure side of provincial budgets that can ensure sustainability. Combining one percent lower healthcare expenditure growth with a reformed Canada Health Transfer (CHT) that was allocated based on the population aged 65 year or over would allow all Atlantic provinces, except for Newfoundland and Labrador, to have long-run sustainable finances. Alternatively, combining this same healthcare expenditure restraint with own-source revenues that keep pace with economic growth would enable all the Atlantic provinces (without exception) to have long-run sustainable finances. A reformed CHT allocation along with provincial own-source revenues that keep pace with economic growth over a 50- to 75-year horizon is also sufficient to ensure sustainable finances for all Atlantic provinces.

In short, I conclude that despite large challenges, there are reasonable tools available to provincial governments to ensure sustainable finances over the long run. Reforms to federal transfers – especially making them a function of demographics – is also an important (though not alone sufficient) option.

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