July 2015

151 Slater Street, Suite 710
Ottawa, Ontario K1P 5H3
Tel: 613-233-8891
Fax: 613-233-8250
csls@csls.ca

CENTRE FOR THE STUDY OF LIVING STANDARDS

Long-term Fiscal and Economic Projections for Canada and the Provinces and Territories, 2014-2038

Don Drummond and Evan Capeluck

CSLS Research Report 2015-08

July 2015

Long-term Fiscal and Economic Projections for Canada and the Provinces and Territories, 2014-2038

Abstract

This report presents long-term fiscal and economic projections for Canada, the provinces and the territories for the 2014-2038 period, and discusses their implications for budgetary balance at the provincial/territorial level. The projections are based on assumptions concerning growth in the working age population, the evolution of participation rates and average hours worked, labour productivity growth, and the inflation rate. Since the assumptions underlying the projections are subject to uncertainty, we present a series of alternative scenarios for long-term economic growth in Canada and the provinces and territories. The report also looks at whether provincial/territorial governments will be able to finance public spending under these alternative fiscal and economic scenarios.

Under the realistic assumptions that non-health spending is flat in real per capita terms and health spending grows at its average pace from the past 15 years, then, by and large, the provinces and territories will not be able to meet the test of balancing revenue growth with growth in public spending without either raising taxes or cutting program spending. Given the higher probability of this scenario and the relative distaste for higher taxes and spending cuts, Canadian governments must find ways to boost economic growth and hence revenue growth to maintain fiscal balance to 2038 and beyond.

Long-term Fiscal and Economic Projections for Canada and the Provinces and Territories, 2014-2038

Table of Contents

List of Tables

List of Charts

List of Appendix Tables

Long-term Fiscal and Economic Projections for Canada and the Provinces and Territories, 2014-2038

Executive Summary

The report presents long-term fiscal and economic projections for Canada, the provinces and the territories for the 2014-2038 period, and discusses their implications for budgetary balance at the provincial/territorial level. Economic growth is generally projected to be slower over the next 24 years than since 2000. Since the assumptions underlying the projections are subject to uncertainty, the results of various sensitivity analyses are also presented. In particular, we present two alternative scenarios for the fiscal projections and six alternative scenarios for the economic projections. The report also looks at whether provincial/territorial governments will be able to finance public spending under these alternative fiscal and economic scenarios. In particular, we examine whether economic growth and hence revenue growth (assuming no major changes in tax policy) will be sufficient to fund likely spending pressures.

Under the realistic assumptions that non-health spending is flat in real per capita terms and health spending grows at its average pace from the past 15 years (in nominal per capita terms), then all, or almost all, provinces and territories, depending upon the economic assumptions, are projected to have insufficient revenue growth to match likely spending increases. Hence, without higher tax rates or action to curtail spending growth, there will be pressure for progressively larger deficits.

A. Description of the Fiscal and Economic Projections

Table 1 briefly describes the key assumptions underlying the baseline projections for nominal GDP growth. These projections are based on assumptions related to labour productivity growth, GDP deflator growth (*i.e.* inflation), growth in average hours worked, working age population growth, and growth in labour force participation rates. In order to account for the effect of compositional changes on average hours worked and the overall labour force participation rate, the population is broken down into three age groups: the 15-24 age group, the 25-54 age group, and the 55+ age group.

Table 1: Summary of the Assumptions Behind the Baseline Projections for Economic Growth

Variable	Assumption
Labour productivity	We assume that total economy labour productivity growth will be the same as the historical growth rates by province observed over the 2000-2014 period.
GDP deflator (inflation)	We assume that all of the provinces will experience GDP deflator growth of 2.0 per cent per year.
Working age population	We employ the M1 scenario from Statistics Canada's official population projections for the Canada and the provinces and territories.
Average hours worked	We assume that average hours worked in every province will decline at the same pace as at the national level in 1976-2014 (that is, -0.56 per cent for the 15-24 age group, -0.14 per cent for the 25-54 age group, and -0.25 per cent for the 55+ age group).
Participation rates	We assume that, in every province, the participation rate for the 15-24 age group will decline at the same pace as at the national level in 2000-2014 (-0.02 per cent); that the participation rate for the 25-54 age group will remain at its 2014 level; and that the participation rate for the 55+ age group will increase over time, but at a diminishing rate, based on trends observed at the national level in 2000-2014.

To fully understand the implications of the economic projections for public sector balance at the provincial/territorial level, the report compares the projected growth rates for nominal GDP to the nominal GDP growth rates required for government revenues to grow at the same pace as public spending. To do this, we developed three scenarios for public spending growth: the base case, alternative scenario A, and alternative scenario B (Table 2).

Table 2: Descriptions of the Scenarios for Public Spending Growth

Variable	Assumption
Base Case	We assume that public spending will be constant in real per capita terms, with growth in nominal per capita expenditure at the assumed inflation rate (2.0 per cent).
Alternative scenario A	We assume that public spending – divided into health and non-health spending – will be constant in real per capita terms, with growth in nominal per capita non-health spending at the assumed inflation rate (2.0 per cent) and nominal per capita health spending at the historical growth rates by province and territory in the deflator for health spending from the 2000-2014 period (which range from 2.2 to 3.6 per cent).
Alternative scenario B	We assume that non-health spending will be constant in real per capita terms, with growth in nominal per capita non-health spending at the assumed inflation rate (2.0 per cent). However, it is assumed that health spending will be positive in real per capita terms, with growth in nominal per capita health spending at the historical growth rates by province and territory from the 2000-2014 period (which range from 3.6 to 6.1 per cent).

B. Key Findings

The results of our baseline projections for nominal GDP growth indicate that, by and large, provincial/territorial governments are able to meet the test of balancing revenue growth with growth in expenditures on public services over the 2014-2038 period, but only provided that the latter is unchanged in real per capita terms (*i.e.* grows in line with inflation and the population) and that the provinces return to fiscal balance quickly. This scenario for public spending growth is referred to as the base case.

In particular, the nominal GDP growth rates required for revenues to keep pace with growth in public spending are lower than the baseline projections for nominal GDP growth for almost every province and territory, indicating that the provincial/territorial governments are expected to be able to fund public expenditures that are constant in real per capita terms (Table

3). The Northwest Territories is the only exception, which results from its poor projected labour productivity performance (-0.5 per cent).

However, it may not be reasonable to assume that public spending will grow in line with inflation and population growth. Therefore, we developed two alternative scenarios for public spending growth: alternative scenario A and alternative scenario B.

As in the base case, alternative scenario A assumes that public spending will grow in line with inflation and population growth. However, unlike the base case, public spending is divided into two components: health and non-health spending. While it is reasonable to assume that the deflator for non-health spending will grow in line with the assumed inflation rate (2.0 per cent), this is a difficult assumption to make for the deflator for health spending, which exhibited annual growth of 2.8 per cent at the national level during the 2000-2014 period. Therefore, in alternative scenario A, we assume that the deflator for health spending will grow at the same pace as in 2000-2014, while growth in the deflator for non-health spending remains at 2.0 per cent.

As before, we are interested in determining the nominal GDP growth rates required for revenues to keep pace with growth in government expenditures that are constant in real per capita terms in the provinces and territories. However, by allowing about half of per capita program spending to grow more quickly than 2.0 per cent, we obtain significantly higher required growth rates for nominal GDP. Nevertheless, as in the base case, required nominal GDP growth is below the baseline projections for nominal GDP growth for almost every jurisdiction for the 2014-2038 period, which further supports the notion that provincial/territorial governments should be able to fund public expenditures that are constant in real per capita terms. The two exceptions are Alberta and the Northwest Territories.

Table 3: Difference Between Projected and Required Nominal GDP Growth, by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	**Scen. A**	**Scen. B**	**Base Case**	**Scen. A**	**Scen. B**
Canada	0.62	0.33	-0.37	0.83	0.52	-0.34
Newfoundland and Labrador	0.99	0.56	-0.51	1.34	0.88	-0.53
Prince Edward Island	0.72	0.38	-0.91	0.87	0.51	-1.18
Nova Scotia	0.60	0.28	-1.37	0.90	0.56	-1.53
New Brunswick	0.68	0.31	-0.67	0.94	0.55	-0.72
Quebec	0.51	0.36	-0.19	0.79	0.63	-0.05
Ontario	0.54	0.22	-0.38	0.72	0.38	-0.36
Manitoba	1.29	0.87	0.11	1.43	0.98	0.05
Saskatchewan	1.08	0.57	-0.37	1.33	0.77	-0.46
Alberta	0.46	-0.16	-1.25	0.67	-0.02	-1.48
British Columbia	1.05	0.95	0.37	1.24	1.14	0.50
Yukon	0.64	0.33	-0.29	1.10	0.75	-0.17
Northwest Territories	-0.93	-1.16	-1.78	-0.69	-0.93	-1.80
Nunavut	0.68	0.24	-0.47	0.66	0.17	-0.79

Note: This table provides the percentage point difference between the baseline projections for nominal GDP growth and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures. Three scenarios for required nominal GDP growth are included the table: the base case, alternative scenario A, and alternative scenario B.
Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

But this test may not be the appropriate one. We believe that there will be more spending pressure than that consistent with keeping real per capita spending constant. Historically, we have consistently seen significant real enrichment in health spending. Furthermore, the ageing of the population alone is expected to add 0.9 percentage points per year to growth in health care costs (CIHI, 2014). Consequently, to maintain health care quality there will be additional cost pressures in addition to those associated with inflation and population growth.

To recognize these real demand pressures, we developed alternative scenario B, which assumes that health spending will grow at the historical per capita nominal rate from 2000-2014. With this higher rate of growth for health expenditure, revenues must grow faster than the rate of inflation and population growth for provincial/territorial governments to balance their budgets.

Our research suggests that almost every provincial/territorial government would be unable to maintain fiscal balance over the 2014-2038 period, unless they raise taxes, cut real per non-health expenditure programs in real per capita terms, manage health spending more efficiently, obtain more federal transfers, or are successful in accelerating economic growth through appropriate fiscal measures. The only exceptions are Manitoba and British Columbia.

C. Sensitivity Analysis Based on Alternative Economic Scenarios

In addition to the baseline projections for nominal GDP growth, we have developed six alternative economic scenarios to compare with the projections for public spending growth (Table 4). Each scenario only changes one assumption at a time relative to the baseline projections. Therefore, we could generate even wider ranges of nominal GDP growth by combining the various assumptions. However, even without combining these assumptions, the range of projections is already quite large. This highlights the uncertainty surrounding the projections for the future path of nominal GDP growth. Nevertheless, despite the wide ranges, projected nominal GDP growth rates are lower than the historical growth rates observed over the 2000-2014 period for almost every jurisdiction due to demographic change.

Table 4: Descriptions of the Alternative Scenarios for Economic Growth

Variable	Assumption
Alternative scenario 1	Instead of applying the same GDP deflator growth rate to every province, we use historical GDP deflator growth rates by province from the 2000-2014 period.
Alternative scenario 2	Instead of using the national growth rates in average hours worked by age group from the 1976-2014 period, we use the national growth rates in average hours worked by age group from the 2000-2014 period.
Alternative scenario 3	Rather than applying the historical labour productivity growth rates by province from the 2000-2014 period, we use the national labour productivity growth rate from the 2000-2014 period (0.99 per cent) for every province.
Alternative scenario 4	Instead of applying the M1 growth scenario, we use the high-growth scenario from Statistics Canada's official population projections.
Alternative scenario 5	In place of the M1 growth scenario, we use the low-growth scenario from Statistics Canada's official population projections.
Alternative scenario 6	Rather than using the national growth rates in average hours worked by age group from 1976-2014, we use the provincial growth rates in average hours worked by age group from 1976-2014.

Table 5 shows the jurisdictions for which the rate of nominal GDP growth required to fund growth in public spending is greater than projected nominal GDP growth. The table breaks down the comparison of projected and required nominal GDP growth rates by six scenarios for projected nominal GDP growth and by three scenarios for required nominal GDP growth.

The Northwest Territories is projected to face the greatest challenge in maintaining fiscal balance over the projection period, with growth in revenues projected to fall short of growth in public spending for almost every economic scenario even in the base case where public spending only grows in line with overall inflation and the population. As previously mentioned, the poor outlook for the Northwest Territories results from its low projected labour productivity growth rate (-0.5 per cent).

Under alternative scenario A, where health spending is allowed to grow at the historical inflation rate for health spending (which is much higher than the overall inflation rate), Alberta appears vulnerable as it is projected to face a revenue shortfall in several of the economic scenarios. Ontario also appears vulnerable in this public spending scenario, with a revenue shortfall in two of seven economic scenarios.

Alberta's projected shortfall stems from above-average growth in the deflator for health spending (3.5 per cent) and weak labour productivity growth (0.8 per cent). However, these factors were related, either directly or indirectly, to the oil boom that took place in Alberta the 2000s, and it is unlikely that these trends will be exhibited over much of the 2014-2038 period. Ontario appears challenged because of below-average labour productivity growth (0.9 per cent).

Under alternative scenario B, where health spending is allowed to grow at its average pace from the past 15 years (in nominal per capita terms), it is clear that, by and large, provincial/territorial governments will not be able to meet the test of balancing revenue growth with growth in public spending over the 2014-2038 period. In fact, under some economic scenarios, all provinces and territories will face revenue shortfalls. Only British Columbia and Manitoba have sufficient revenue growth under *some* of the economic scenarios.

The relatively rosy outlooks for British Columbia and Manitoba are related to above-average labour productivity growth (1.4 and 1.5 per cent, respectively) and below-average slowdowns in labour input growth. In addition, projected growth in nominal per capita health spending for British Columbia is well below average (3.6 per cent).

Given the higher probability of this alternative scenario, boosting government revenues to maintain fiscal balance is a much more politically palatable or acceptable path than raising taxes or cutting program spending, and the easiest way for revenues to grow is through faster economic growth. And of course, in addition to raising government revenues through taxes, higher GDP raises incomes and employment which, in turn, results in a higher standard of living.

Table 5: Jurisdictions where Revenue Growth is Likely to Fall Short of Public Spending Growth, by Fiscal and Economic Scenario, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

Scenario for Nominal GDP Growth	2014-2026			2026-2038		
	Scenario for Public Spending Growth			Scenario for Public Spending Growth		
	Base Case	Alternative Scenario A	Alternative Scenario B	Base Case	Alternative Scenario A	Alternative Scenario B
Baseline Projections	NT	AB, NT	All jurisdictions except for MB and BC	NT	AB, NT	All jurisdictions except for MB and BC
Alternative Scenario 1	NT	NT	PE, NS, NB, QC, ON, YT, NT	NT	NT	PE, NS, NB, QC, ON, AB, YT, NT
Alternative Scenario 2	NT	ON, AB, NT	All jurisdictions except for BC	NT	AB, NT, NU	All jurisdictions except for BC
Alternative Scenario 3	None	NL	All jurisdictions	None	None	All jurisdictions except for BC
Alternative Scenario 4	NT	NT	NL, PE, NS, NB, ON, SK, AB, NT, NU	NT	NT	NL, PE, NS, NB, SK, AB, NT, NU
Alternative Scenario 5	NT	ON, AB, NT	All jurisdictions	NT	ON, AB, NT, NU	All jurisdictions
Alternative Scenario 6[a]	None	AB	All provinces except for MB and BC	None	None	All provinces except for MB and BC

Note: This table shows the jurisdictions for which required nominal GDP growth is expected to be greater than projected nominal GDP growth. There are three scenarios for required nominal GDP growth (the base case, alternative scenario A, and alternative scenario B) and seven scenarios for projected nominal GDP growth (the baseline projections and six alternative scenarios).
Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

Long-term Fiscal and Economic Projections for Canada and the Provinces and Territories, 2014-2038[1]

I. Introduction

This report presents long-term fiscal and economic projections for Canada, the provinces and the territories for the 2014-2038 period. It is important to note that we are not making forecasts but only conditional projections based on certain assumptions regarding population growth, the evolution of participation rates and average hours worked, labour productivity growth, and inflation. Since these assumptions are subject to uncertainty, the results of various sensitivity analyses are also presented. Indeed, this report seeks to provide a range of plausible projections for economic growth, so that policymakers can take heed of this range and plan accordingly. However, there is no full guarantee that actual growth will fall within this range.

This report is organized into five sections. The current section introduces the report. The second section presents the baseline projections for Canada and the provinces and territories for the 2014-2038 period. The methodology and assumptions underlying these results are also discussed at length. The third section compares the baseline projections to economic projections from other sources. The fourth section examines the implications of the baseline projections for budgetary balance in the provinces and territories. In particular, it considers whether the baseline projections for nominal GDP growth exceed the rate of nominal GDP growth required to finance expected growth in public spending. The fifth section presents the results of the various sensitivity analyses, which provide alternative scenarios for economic growth in Canada, the provinces and the territories.

[1] This report was written by CSLS Board member Don Drummond and CSLS economist Evan Capeluck with input from CSLS Executive Director Andrew Sharpe and CSLS Board Members Pierre Fortin and Alan Nymark. We would like to thank Bert Waslander for comments on an earlier draft of the report. We would also like to thank Matthew Calver for his contributions to the report. Direct any questions to don.drummond@queensu.ca or evancapeluck@gmail.com.

II. Baseline Projections

This section presents the baseline projections for Canada, the provinces and the territories for the 2014-2026 and 2026-2038 periods. It is organized into three sub-sections. The first sub-section provides a brief overview of the methodology and assumptions underlying the baseline projections. It also presents the results for Canada and the provinces and territories. The second sub-section provides more detail on the methodology and assumptions behind the baseline projections for the provinces. Similarly, the third sub-section elaborates on the methodology and assumptions built into the baseline projections for the territories.

A. Overview of the Baseline Projections

Table 6 presents the baseline projections for real GDP growth in Canada, the provinces and the territories for the 2014-2026 and 2026-2038 periods. Real GDP growth can be decomposed into two components: 1) labour productivity growth (that is, growth in real GDP per hour worked); and 2) growth in total hours worked. The relationship is represented by the following equation:

$$\Delta \ln(Y) = \Delta \ln(Y/H) + \Delta \ln(H)$$

where Y is real GDP, H is total hours worked, and Y/H is labour productivity. Therefore, to project real GDP growth, we developed projections for the future advance of total hours worked and labour productivity growth.[2] Growth in total hours work can be further decomposed into employment growth and growth in average hours worked:

$$\Delta \ln(H) = \Delta \ln(H/E) + \Delta \ln(E)$$

where H/E is average hours worked and E is employment. Thus, to project growth in total hours worked, we made separate projections for the future paths of employment and average hours worked. We start with projecting labour force growth, since employment tends to grow in line with the supply of labour over the long run.[3] The projections for labour force growth are based on separate projections for working age population growth and growth in the labour force participation rate. The relationship between labour force growth, working age population growth and growth in the participation rate is represented by the following equation:

$$\Delta \ln(E) \approx \Delta \ln(L) = \Delta \ln(L/N) + \Delta \ln(N)$$

---

[2] The assumptions underlying the projections for total hours worked are illustrated in Appendix Table 2, Appendix Table 3, Appendix Table 5 and Appendix Table 6.

[3] This is based on the assumption that the unemployment rate will remain fixed at its 2014 level. The relationship between growth in the participation, employment and unemployment rates is as follows:

$$\Delta \ln(PR) = \Delta \ln(ER) - \Delta \ln(1 - UR)$$

where PR is the participation rate, ER is the employment rate, and UR is the unemployment rate.

where L is the labour force, N is the working age population (aged 15 years and over), and L/N is the participation rate.

To project growth in the working age population, we rely on Statistics Canada's official population projections for the 2014-2038 period. In particular, we employ the medium (M1) scenario projection, which is based on demographic trends observed over the 1991-2011 period.[4] At the national level, this scenario projects working age population growth of 0.9 per cent per year between 2014 and 2038. Later, as a sensitivity analysis, we also apply alternative population growth projections – namely, the high- and low-growth scenarios. The high-growth scenario projects working age population growth of 1.2 per cent per year for the 2014-2038 period, while the low-growth scenario projects working age population growth of 0.7 per cent per year.

The assumptions underlying the future path of participation rates are somewhat more complex.[5] In addition, the methodologies used to project the future path of participation rates are different between the provinces and the territories due to data limitations for the territories.[6] The assumptions underlying these two sets of projections are discussed in following sub-sections.

The next step to project the growth in total hours worked is to determine future trends in average hours worked. However, as before, the assumptions behind the projections for average hours worked are different between the provinces and the territories due to data limitations for the territories.[7] These assumptions will be discussed separately later in this section.

Compared with projecting future developments in total hours worked, projecting the future pace of labour productivity growth is considerably more difficult. Therefore, in the baseline projections, we assume that total economy labour productivity growth will be the same as the historical growth rates by province and territory observed for the 2000-2014 period. The 2000-2014 period was chosen to project economic growth for three reasons: 1) it is a fairly long period; 2) it covers almost two complete business cycles, with one complete cycle in 2000-2007 and seven years of another cycle in 2007-2014, which may have ended in a peak (for at least some provinces) in 2014; and 3) the labour productivity growth experienced over this period was similar to what was experienced over longer periods (*e.g.* 1.0 per cent per year in 2000-2014 versus 1.4 per cent per year in 1981-2000 and 1.2 per cent per year in 1981-2014).

It is also important to note that labour productivity growth was calculated using total economy estimates of real GDP from the expenditure accounts for 2000-2013, which were

---

[4] The medium (M1) scenario is based on the following assumptions: interprovincial migration trends observed over the 1991-2011 period will persist in 2014-2038; the total fertility rate reaches 1.67 births per woman in 2021 and then remains constant; life expectancy reaches 89.1 years for females and 87.5 years for males in 2062; and the net international immigration rate reaches 0.56 per cent in 2022 and then remains constant. Refer to Appendix Table 8 for more information. Appendix Table 8 decomposes projected population growth by province and territory into the following components: natural increase, net international migration, and net interprovincial migration.

[5] The population is divided into three age groups (15-24 years, 25-54 years, and 55+ years) to project growth in total hours worked. Different assumptions concerning growth in average hours worked and the evolution of participation rates are made for each group. This methodology is discussed in more detail later in this section.

[6] Participations rates are only available for two age groups (15-24 years and 25+ years) for the territories.

[7] Estimates of average hours worked are not available by age group for the territories.

extended to 2014 using real GDP estimates from the industry accounts for 2014.[8] In addition, we used total economy estimates of hours worked from the Canadian Productivity Accounts (CPA) instead of the Labour Force Survey (LFS), as the former generates more accurate estimates of labour productivity growth.[9] However, hours worked data from the CPA were only available up to 2013 for the provinces and territories at the time of writing. As a result, we extended total hours worked for the provinces to 2014 using LFS data for 2014. In addition, hours worked data from the LFS are not produced for the territories. Thus, we used labour productivity growth from the 2000-2013 period to generate the territorial projections.

During the 2000-2013 period, growth in total hours worked (and therefore labour productivity growth) was quite similar according to both the LFS and CPA data (Appendix Table 7). For example, at the national level, growth in total hours worked was 1.0 per cent per year between 2000 and 2013 according to the LFS data, while it was 1.1 per cent according to the CPA data. Therefore, it is likely that this close relationship will hold true in 2000-2014.

Table 6 also presents the baseline projections for nominal GDP growth in Canada and the provinces and territories for the 2014-2026 and 2026-2038 periods. These projections are based on the assumption that all of the provinces will experience inflation (defined as growth in the GDP deflator) of 2.0 per cent per annum over the 2014-2038 period. We assumed an inflation rate of 2.0 per cent because this is the current target rate of inflation agreed upon by the Bank of Canada and the Minister of Finance, and we believe that this target will be maintained and broadly achieved until 2036.[10] Later, as a sensitivity analysis, we use historical inflation rates by province and territory from the 2000-2014 period, which ranged from 1.8 per cent per year in British Columbia to 4.1 per cent per year in Newfoundland and Labrador.

The projections for smaller and less diversified jurisdictions are much more uncertain than those for larger and more diversified jurisdictions. For example, the outlook for small, resource-dependent jurisdictions like Newfoundland and Labrador is greatly dependent on the performance of a small number of sectors (*e.g.* mining and oil and gas extraction) and even projects. However, the projections for resource-dependent jurisdictions do not take into account the sectoral composition of the economy or the outlook for particular projects and sectors. The addition of a small number of natural resource projects to such an economy may have significant implications for both labour productivity growth and labour input growth. Unfortunately, we are not in a position to make meaningful forecasts about the future trends of these sectors, as the outlook for these sectors is extremely uncertain.

---

[8] Productivity analysts usually focus on the business sector because of issues with the measurement of productivity and real output in the non-business sector. This report focuses on total economy productivity for consistency with macroeconomic modelling exercises which cover the total economy. See Smith (2004) for a discussion of the issues involved in the use of total economy and business sector productivity.

[9] We use hours worked data from the LFS to project growth in average hours worked, as hours worked data from the CPA – our preferred source for productivity estimates for the total economy – are not available by age group.

[10] While the Bank of Canada targets a growth rate for the Consumer Price Index (CPI) rather than a growth rate for the GDP deflator, we believe that these two inflation measures will move in line with each other over much of the 2014-2038 period. In 2000-2014, growth in the GDP deflator was slightly higher than growth in the CPI at the national level (2.2 per cent per year versus 2.0 per cent per year) due to increases in commodity prices.

Table 6: Long-term Economic Growth Projections, using 2 Per Cent GDP Deflator Growth, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2000-2014, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2000-2014			2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	1.03	0.99	2.03	0.55	0.99	1.54	0.57	0.99	1.57
Newfoundland and Labrador	0.87	1.66	2.54	-1.09	1.66	0.54	-1.09	1.66	0.55
Prince Edward Island	0.81	1.01	1.82	0.62	1.01	1.63	0.55	1.01	1.56
Nova Scotia	0.29	1.11	1.40	-0.42	1.11	0.69	-0.39	1.11	0.71
New Brunswick	-0.03	1.16	1.14	-0.39	1.16	0.77	-0.40	1.16	0.76
Quebec	0.62	0.96	1.59	0.22	0.96	1.18	0.26	0.96	1.22
Ontario	0.78	0.88	1.67	0.54	0.88	1.42	0.53	0.88	1.41
Manitoba	0.62	1.54	2.17	0.77	1.54	2.32	0.79	1.54	2.34
Saskatchewan	0.91	1.42	2.35	0.41	1.42	1.83	0.47	1.42	1.90
Alberta	2.39	0.80	3.21	1.51	0.80	2.32	1.47	0.80	2.28
British Columbia	1.02	1.40	2.44	0.73	1.40	2.14	0.73	1.40	2.15
Yukon	2.27	1.20	3.49	0.24	1.20	1.45	0.33	1.20	1.54
Northwest Territories	2.41	-0.50	1.90	-0.19	-0.50	-0.69	-0.29	-0.50	-0.79
Nunavut	3.36	0.97	4.36	0.84	0.97	1.81	0.67	0.97	1.64

Note: Labour productivity is defined as real GDP per hour worked. The figures for the territories for 2000-2014 are actually for 2000-2013.
Source: CSLS calculations based on Statistics Canada data.

Table 6: Long-term Economic Growth Projections, using 2 Per Cent GDP Deflator Growth, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2000-2014, 2014-2026 and 2026-2038 (continued)

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP

	2000-2014			2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	2.03	2.21	4.29	1.54	2.00	3.58	1.57	2.00	3.60
Newfoundland and Labrador	2.54	4.06	6.95	0.54	2.00	2.56	0.55	2.00	2.56
Prince Edward Island	1.82	2.26	4.13	1.63	2.00	3.66	1.56	2.00	3.59
Nova Scotia	1.40	1.94	3.37	0.69	2.00	2.70	0.71	2.00	2.73
New Brunswick	1.14	2.14	3.37	0.77	2.00	2.79	0.76	2.00	2.77
Quebec	1.59	1.90	3.54	1.18	2.00	3.20	1.22	2.00	3.25
Ontario	1.67	1.78	3.48	1.42	2.00	3.45	1.41	2.00	3.44
Manitoba	2.17	2.17	4.43	2.32	2.00	4.37	2.34	2.00	4.39
Saskatchewan	2.35	4.17	6.60	1.83	2.00	3.87	1.90	2.00	3.94
Alberta	3.21	3.37	6.64	2.32	2.00	4.37	2.28	2.00	4.32
British Columbia	2.44	1.77	4.25	2.14	2.00	4.18	2.15	2.00	4.19
Yukon	3.49	2.03	5.60	1.45	2.00	3.48	1.54	2.00	3.57
Northwest Territories	1.90	2.06	4.00	-0.69	2.00	1.30	-0.79	2.00	1.20
Nunavut	4.36	3.53	8.04	1.81	2.00	3.85	1.64	2.00	3.67

Source: CSLS calculations based on Statistics Canada data. The figures for the territories for 2000-2014 are actually for 2000-2013.

B. Methodology for Provincial Projections

As previously mentioned, the projections for total hours worked are based on separate projections for growth in the size of the labour force (which, in turn, are based on population projections and assumptions regarding the future path of participation rates) *and* for growth in average hours worked.

To project overall labour force growth, the labour force is broken down into three age groups: young workers (aged 15-24 years), prime-age workers (aged 25-54 years), and older workers (aged 55+ years). To project growth in the labour force, we made a series of assumptions regarding the future path of participation rates by age group and applied these participation rates to the official population projections from Statistics Canada. It is important to note that the participation rates and average hours worked estimates used to construct the projections for labour force growth are taken from the LFS.[11]

In particular, we made separate assumptions for the future growth in the participation rate of each age group at the national level and applied these growth rates to the prevailing participation rates of each age group at the provincial level. In other words, trends in participation rates by age group in each province were assumed to be the same as trends in participation rates by age group for Canada as a whole. The different assumptions for the three age groups are briefly outlined below.

Chart 1 illustrates the underlying assumptions concerning the future path of participation rates in Canada for the three age groups. The participation rate for the young age group appears to be largely cyclically-driven, falling during economic slowdowns (such as the early 1990s and late 2000s) and rising again in more prosperous periods. However, we expect the participation rate for the young age group to continue to its recent decline due to the increased emphasis on educational attainment and deteriorating prospects for low-skill workers. In particular, we assume that the participation rate for the young age group will decline in 2014-2038 at the same pace as in 2000-2014 (that is, -0.02 per cent per year). This means that the participation rate of the young age group will exhibit an average annual decrease of 0.02 per cent per year in all of the provinces.

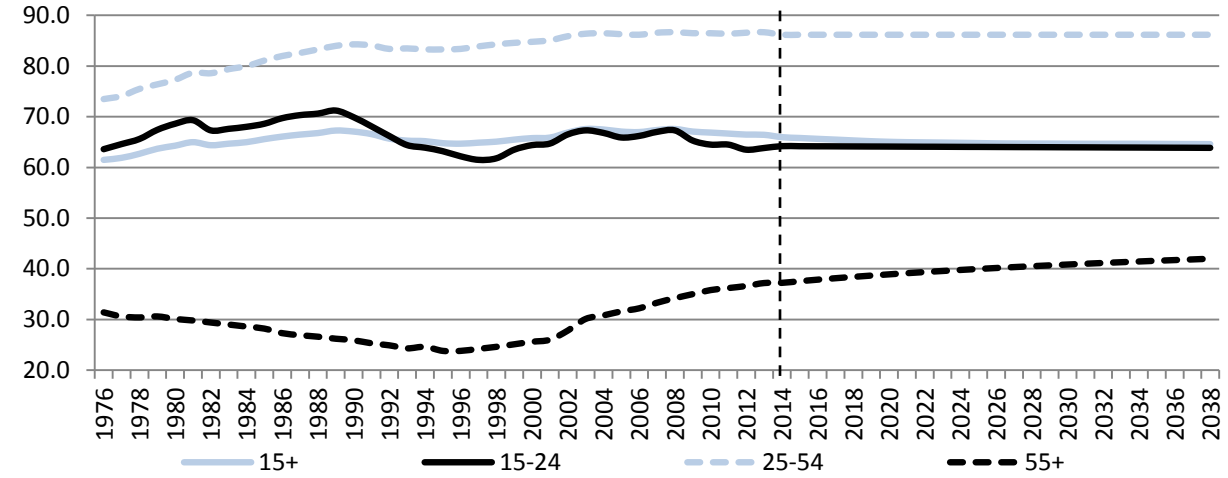
The participation rate for prime-age age group is expected to remain constant over the projection period, as the historical gains in the participation rate for this group, which were driven by an increase in the participation of women in the labour market, appear to have been fully realized in the mid-2000s (Chart 2). More specifically, the participation rate for prime-age age group is assumed to remain at its 2014 level over the 2014-2038 period (Chart 1). Therefore, we assume that the participation rate for the prime-age age group will experience no change in all of the provinces.

---

[11] In contrast, to calculate labour productivity growth, we used hours worked data from the CPA as these estimates are more appropriate for estimating labour productivity growth than hours worked data from the LFS. However, we had to use hours worked data from the LFS to project growth in average hours worked by age group, as hours worked data from the CPA are not available by age group.

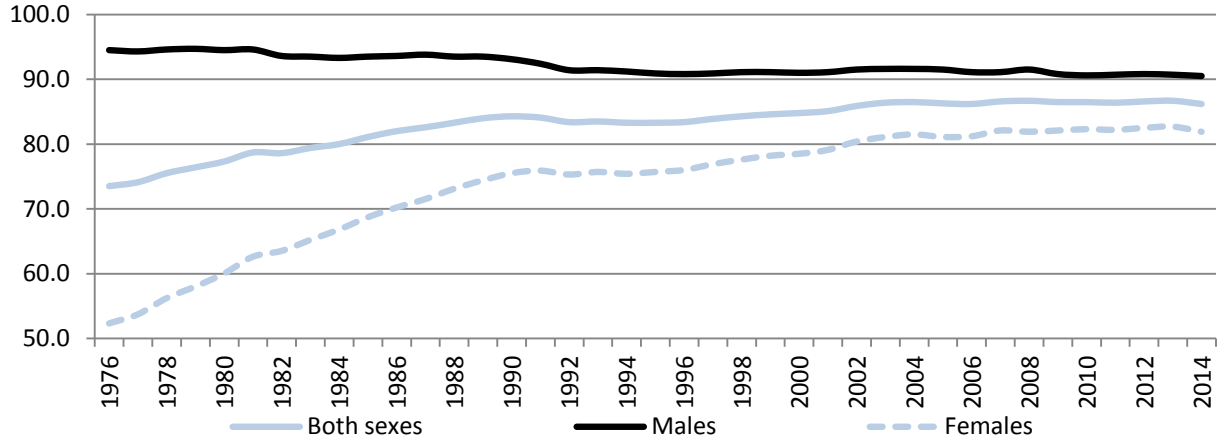
The participation rate for the older age group is assumed to increase over time, but at a diminishing rate, driven by changes to pension systems and increases in average life expectancy, among other factors (Chart 1). The projection for the older age group is based on an equation for a trend line for the national participation rate of the older age group in 2000-2014.[12] In every province, the participation rate for older age group is projected to increase at an average annual rate of 0.63 per cent in 2014-2026 and 0.37 per cent in 2026-2038.

Chart 1: Participation Rates by Age Group, Canada, Per Cent, 1976-2038



Source: CSLS calculations based on Statistics Canada data.

Chart 2: Participation Rates by Sex for Prime-age Workers (25-54), Canada, Per Cent, 1976-2014



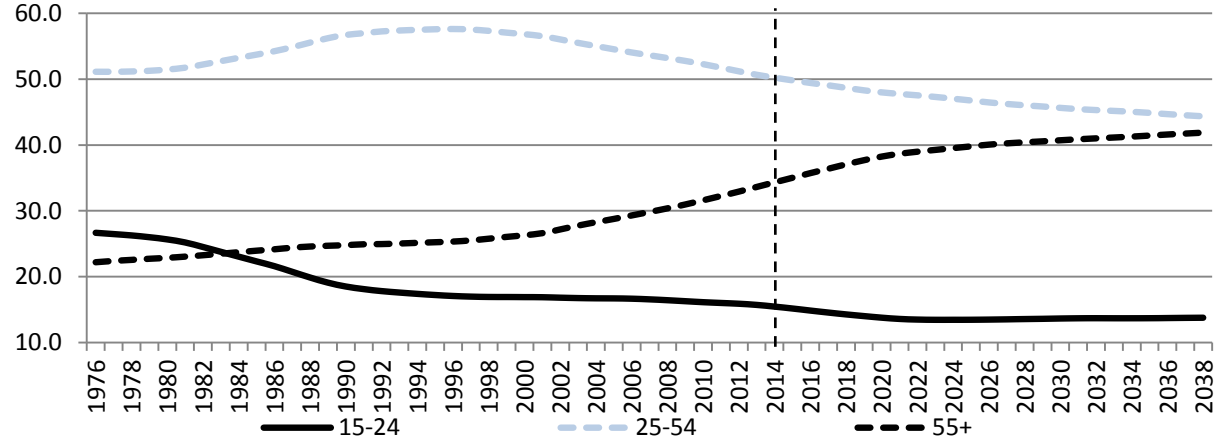
Source: CSLS calculations based on Statistics Canada data.

Even though we expect relatively stable participation rates for young and prime-age age groups and an increase in the participation rate of the older age group, the overall participation rate is expected to decline over the 2014-2038 period (-0.09 per cent per year), driven by compositional changes in the labour force (Chart 1 and Chart 3). In particular, the share of the older age group in the working age population is expected to increase markedly from 34.3 per

[12] The equation for the trend line is as follows: $PR_t = 4.9154 \times \ln(t) + 23.494$ where PR_t is the participation rate in year t and $t = 1$ in 2000.

cent in 2014 to 41.9 per cent in 2038, while the shares of the younger and prime-age age groups are expected to decline from 15.4 to 13.7 per cent and from 50.2 to 44.4 per cent, respectively.

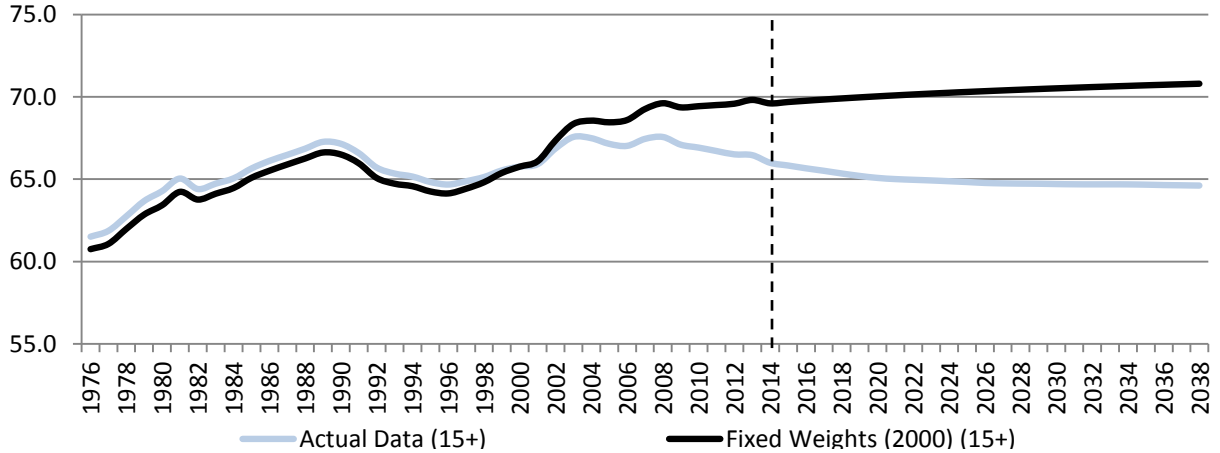
Chart 3: Shares of the Working Age Population by Age Group, Canada, Per Cent, 1976-2038



Source: CSLS calculations based on Statistics Canada data.

Chart 4 shows how the aggregate participation rate would evolve if the shares of the young, prime-age and older age groups in the working age population were fixed at their 2000 level. As expected, the aggregate participation rate would increase, driven by increases in the participation rate for the older age group. In particular, the participation rate would increase from 65.8 per cent in 2000 to 69.6 per cent in 2014 to 70.8 per cent in 2038. However, after allowing for changes in working age population shares, the participation rate only increases from 65.8 per cent in 2000 to 66.0 per cent in 2014 and is expected to fall to 64.6 per cent in 2038. It is important to note that more than half of the contribution of ageing to the evolution of the aggregate participation rate – as shown by the gap between the two series in Chart 4 – had already taken place between 2000 and 2014. In fact, the gap between the two series was 3.6 percentage points in 2014, 58.4 per cent of the projected gap in 2038 (6.2 percentage points).

Chart 4: The Effect of the Age Structure on the Overall Participation Rate, Canada, Per Cent, 1976-2038

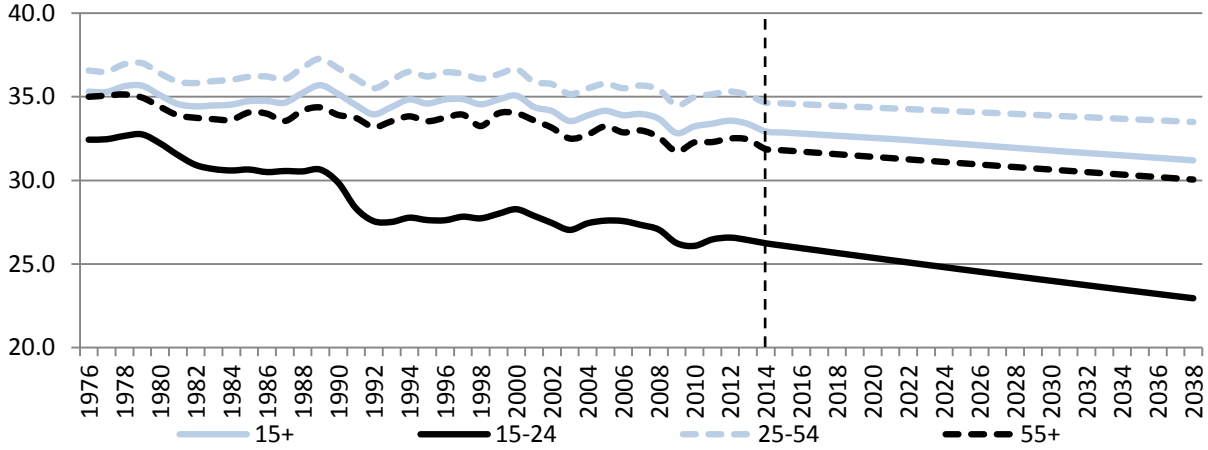


Note: The 'Fixed Weights (2000)' series shows how the overall participation rate would evolve if the shares of young, prime-age and older age groups in the working age population were fixed at their 2000 level.
Source: CSLS calculations based on Statistics Canada data.

In order to determine the future growth in total hours worked, we projected growth in average hours worked by age group and applied them to the projections for labour force growth. Growth in average hours worked by age group in each province was assumed to be the same as the growth in average hours worked by age group exhibited at the national level. In particular, average hours worked was assumed to vary in 2014-2038 at the same pace as in 1976-2014; that is, -0.56 per cent per year for the young age group, -0.14 per cent per year for the prime-age age group, and -0.25 per cent per year for the older age group. The sensitivity of the projections to the choice of period for average hours worked growth is illustrated in the fifth section. These assumptions are illustrated in Chart 5.

At the national level, growth in aggregate average hours worked is projected at -0.22 per cent per year for the 2014-2038 period, driven by falling average hours worked for every age group. This decline is expected to be driven by a continuation of the following the historical shift from full-time to part-time work arrangements, which is in large part attributable to the evolution of the industrial composition of the economy (*i.e.* the servicification of the economy).

Chart 5: Average Hours Worked per Worker by Age Group, Weekly Hours, Canada, 1976-2038



Source: CSLS calculations based on Statistics Canada data.

Table 7 briefly summarizes the assumption and methodology underlying the baseline projections for the provinces for 2014-2038.

Table 7: Assumptions Underlying the Baseline Projections for the Provinces, National vs. Provincial Trends

Variables	National Trends	Provincial Trends
Labour Force Growth		
Working Age Population Growth		✓
Growth in Participation Rates	✓	
Growth in Average Hours Worked	✓	
Labour Productivity Growth		✓
GDP Deflator Growth	✓	

Note: Working age population growth projections are from Statistics Canada's M1 scenario. Projections for growth in participation rates by age group are based on national trends observed over the 2000-2014 period. Projections for growth in average hours worked by age group are based on national trends observed over the 1976-2014 period. Projections for labour productivity growth are based on provincial trends observed over the 2000-2014 period. Projections for GDP deflator growth are not based on historical trends, but rather are based on our expectation for nominal GDP deflator growth at the national level.

The baseline projections for Canada and the provinces for the 2014-2038 period are presented in Table 8. Box 1 discusses the factors determining different growth rates for total hours worked across jurisdictions. Appendix Table 2 and Appendix Table 3 show the assumptions behind the projections for total hours worked growth related to growth in the working age population, participation rates and average hours worked. Similarly, Appendix Table 1 shows the historical growth rates exhibited by these variables in 2000-2014. As previously mentioned, the base case assumes that every province will experience inflation of 2.0 per cent per year in 2014-2038, and that total economy labour productivity growth will be the same as the historical growth rates by province observed over the 2000-2014 period.

Table 8: Long-term Economic Growth Projections, using 2 Per Cent GDP Deflator Growth, Compound Annual Growth Rates, Per Cent, Canada and the Provinces, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	0.55	0.99	1.54	0.57	0.99	1.57
Newfoundland and Labrador	-1.09	1.66	0.54	-1.09	1.66	0.55
Prince Edward Island	0.62	1.01	1.63	0.55	1.01	1.56
Nova Scotia	-0.42	1.11	0.69	-0.39	1.11	0.71
New Brunswick	-0.39	1.16	0.77	-0.40	1.16	0.76
Quebec	0.22	0.96	1.18	0.26	0.96	1.22
Ontario	0.54	0.88	1.42	0.53	0.88	1.41
Manitoba	0.77	1.54	2.32	0.79	1.54	2.34
Saskatchewan	0.41	1.42	1.83	0.47	1.42	1.90
Alberta	1.51	0.80	2.32	1.47	0.80	2.28
British Columbia	0.73	1.40	2.14	0.73	1.40	2.15

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP

	2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	1.54	2.00	3.58	1.57	2.00	3.60
Newfoundland and Labrador	0.54	2.00	2.56	0.55	2.00	2.56
Prince Edward Island	1.63	2.00	3.66	1.56	2.00	3.59
Nova Scotia	0.69	2.00	2.70	0.71	2.00	2.73
New Brunswick	0.77	2.00	2.79	0.76	2.00	2.77
Quebec	1.18	2.00	3.20	1.22	2.00	3.25
Ontario	1.42	2.00	3.45	1.41	2.00	3.44
Manitoba	2.32	2.00	4.37	2.34	2.00	4.39
Saskatchewan	1.83	2.00	3.87	1.90	2.00	3.94
Alberta	2.32	2.00	4.37	2.28	2.00	4.32
British Columbia	2.14	2.00	4.18	2.15	2.00	4.19

Note: Labour productivity is defined as real GDP per hour worked.
Source: CSLS calculations based on Statistics Canada data.

Box 1: Projections for Growth in Total Hours Worked

Between 2000-2014 and 2014-2026, annual growth in total hours worked is projected to fall 0.5 percentage point at the national level from 1.0 to 0.6 per cent, with a huge variation in the change in growth rates across jurisdictions. For instance, there is a projected massive decline in annual total hours worked growth in Newfoundland and Labrador (-2.0 percentage points), while Manitoba exhibits a slight increase (0.1 percentage point). Manitoba is the only province with an increase in the rate of change in total hours worked between the two periods.

There are many factors driving the projections for growth in total hours worked. In particular, the projections for each jurisdiction are determined by three factors: 1) growth in the working age population; 2) growth in the aggregate participation rate; and 3) changes in aggregate average hours worked.[1] However, since the working age population is composed of three age groups (15-24 years, 25-55 years, and 55+ years), growth in the aggregate participation rate and aggregate average hours worked are each determined by two factors: 1) changes in the shares of the working age population by age group, which, in turn, is driven by differences in the population growth by age group (the **compositional effect**); and 2) changes in participation rates and average hours worked for each age group (the **within-group effect**).

In Newfoundland and Labrador, the fall in annual total hours worked growth from 0.9 per cent in 2000-2014 to -1.1 per cent in 2014-2026 (-2.0 percentage points) is composed of: a 0.6 percentage-point decline in annual working age population growth, a 1.6 percentage-point decline in annual growth in the aggregate participation rate, and a 0.2 percentage-point increase in annual growth in the aggregate average hours worked. The fall in annual growth in the aggregate participation rate was driven by slower growth in participation rates for each age group. The rise in annual growth in aggregate average hours worked was due to faster growth in average hours worked for older workers (55+).

In Manitoba, the slight increase in annual total hours worked growth from 0.6 per cent per year to 0.8 per cent per year (0.1 percentage point) was due to: a 0.1 percentage-point rise in annual working age population growth, no change in annual growth in the aggregate participation rate, and a 0.1 percentage-point increase in annual growth in the aggregate average hours worked. The improvement in working age population growth is linked to a 0.4 percentage-point increase in the growth rate for the prime-age population (25-54). Unlike Newfoundland and Labrador, there is no large decline in annual growth in the aggregate participation rate for two reasons: 1) annual growth in the participation rate was already quite weak in Manitoba in 2000-2014 (0.0 per cent), while it was very strong in Newfoundland and Labrador (1.1 per cent); and 2) Manitoba is expected to exhibit stronger growth in its prime-age population (which has a relatively high participation rate) *and* weaker growth in its young population (which has a relatively low participation rate) in 2014-2026 than in 2000-2014, while Newfoundland and Labrador is expected to experience the opposite.

[1] Appendix Table 1, Appendix Table 2 and Appendix Table 3 provide the breakdown of total hours worked growth in the provinces for the 2000-2014, 2014-2026 and 2026-2038 periods, respectively

C. Methodology for Territorial Projections

The territorial projections are constructed using a methodology parallel to the one used for the provincial projections. However, adjustments had to be made given that fewer data are available for the territories. In particular, participation rates are only available for two age groups: young workers (15-24 years) and individuals aged 25+. In addition, hours worked data for the territories are only available from the CPA. Unlike hours worked data from the LFS, hours worked data from the CPA cannot be broken down by age group.

To maintain consistency with the provincial projections, we assume that the participation rates by age group in the territories will grow in line with participation rates by age group at the national level over the 2014-2038 period. Therefore, as before, the participation rate for the young age group is expected to decrease by 0.02 per cent per year in 2014-2038. We also assume that the national growth rates for the participation rate of individuals aged 25+ for 2014-2026 (-0.18 per cent per year) and 2026-2038 (-0.02 per cent per year) apply to the territories. It is important to note that the -0.18 and -0.02 figures are derived from the projections for Canada (which were constructed using the same methodology as the provincial projections) for 2014-2026 and 2026-2038 and, therefore, reflect both the previous assumptions made regarding the evolution in participation rates for the three age groups *and* compositional changes in the age structure over the projection horizon.

The method for projecting growth in average hours worked by age group is somewhat different for the territories, as hours worked data from the LFS are not available for the territories. First, we used CPA data to calculate average hours worked in each territory relative to average hours worked in Canada as a whole for 2013. Second, we rebased average hours worked in each territory for 2013 using: 1) LFS data on average hours worked in Canada in 2013; and 2) the ratio of hours worked in each territory to the Canadian average in 2013 from the CPA. Third, we assumed that the national growth rates in average hours worked in 2014-2038 for the young workers and individuals aged 25+ apply to the territories. In particular, we assume that average hours worked for young workers will fall by 0.56 per cent per year in 2014-2038, while average hours worked for individuals aged 25+ will fall by 0.21 per cent per year in 2024-2026 and 0.19 per cent per year in 2026-2038. As above, the 0.21 and 0.19 figures are derived from the national projections for 2014-2038, which were presented alongside the provincial projections.

The baseline projections for Canada and the territories for the 2014-2038 period are presented in Table 9. Appendix Table 5 and Appendix Table 6 show the assumptions behind the projections for total hours worked growth related to growth in the working age population, participation rates and average hours worked. Similarly, Appendix Table 4 shows the historical growth rates exhibited by these variables in 2004-2014. As before, the baseline projections are based on the assumption that all of the territories will experience GDP deflator growth of 2.0 per cent per annum in 2014-2038, and that total economy labour productivity growth will be the same as the historical growth rates by territory observed over the 2000-2013 period.

Table 9: Long-term Economic Growth Projections, using 2 Per Cent GDP Deflator Growth, Compound Annual Growth Rates, Per Cent, Canada and the Territories, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	0.55	0.99	1.54	0.57	0.99	1.57
Yukon	0.24	1.20	1.45	0.33	1.20	1.54
Northwest Territories	-0.19	-0.50	-0.69	-0.29	-0.50	-0.79
Nunavut	0.84	0.97	1.81	0.67	0.97	1.64

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP

	2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	1.54	2.00	3.58	1.57	2.00	3.60
Yukon	1.45	2.00	3.48	1.54	2.00	3.57
Northwest Territories	-0.69	2.00	1.30	-0.79	2.00	1.20
Nunavut	1.81	2.00	3.85	1.64	2.00	3.67

Note: Labour productivity is defined as real GDP per hour worked.
Source: CSLS calculations based on Statistics Canada data.

III. Comparison to Other Economic Projections

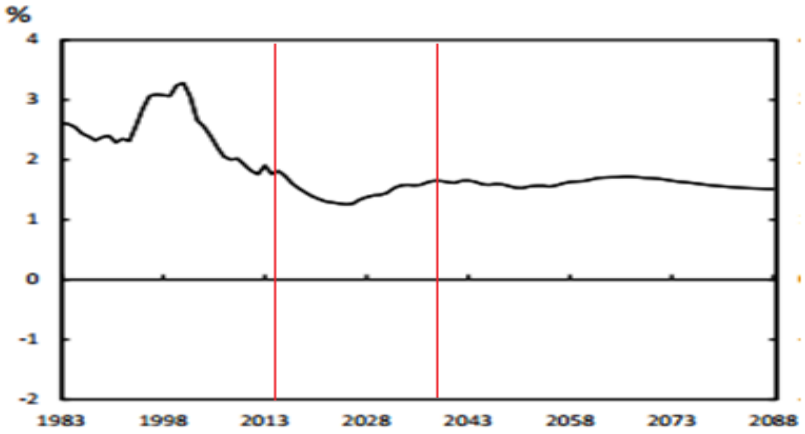
Projections of long-term economic performance at the national and provincial levels are produced and distributed by various public and private research organizations. We will briefly discuss several projections of economic growth produced by other organizations and the methodologies and assumptions underlying these projections.

A. National Projections

Parliamentary Budget Office

The Parliamentary Budget Office (PBO) produces long term projections of fiscal sustainability nationally which include an estimate of long-term growth in potential real GDP (Cameron et al. 2014). It is assumed that actual real GDP growth will converge toward potential real GDP growth in the long run, following the closure of the output gap. These forecasts are based on projected growth in labour input and labour productivity. Similar to the approach used in this report, the PBO projected labour input is determined by age- and gender-specific trends in the working age population, projections of labour force participation rates based on recent trends, and projections of average weekly hours worked based on recent trends. These projections assume that annual labour productivity growth, measured as output per hour worked, will eventually return to the average rate observed between 1983 and 2013, namely 1.1 per cent.

Chart 6: Historical and Projected Annual Potential Real GDP Growth in Canada, Parliamentary Budget Office, 1983-2088



Source: Figure 3-1 from Cameron et al. (2014)

From 2014 to 2038, average annual real GDP growth is projected to be 1.6 per cent in Canada (Chart 6), the same as the baseline projection presented in this section for the 2014-2038 period (1.6 per cent).[13] Their projected growth in real GDP can be decomposed into the

[13] The PBO projections provide average growth rates over the periods 2014-2018 (2.6 per cent growth in real GDP) and 2019-2088 (1.5 per cent growth in real GDP). To facilitate comparison with our projections, we have calculated average

following: annual growth of 1.1 per cent in labour productivity, annual growth of 0.7 per cent in the working age population, annual growth of -0.2 per cent in the employment rate, and almost no growth in average hours worked (0.05 per cent per year).

TD Economics

A special report recently released by TD Economics provides projections for the period 2014-2038 (Bartlett et al. 2015). Similar to our projections, real GDP was projected using the medium (M1) scenario from Statistics Canada's population projections, projections of total hours worked based on recent trends in employment rates by age and sex, and an assumed rate of growth in labour productivity (output per hour worked) based on its long-run average. The trend growth rate of labour productivity is assumed to be 1.2 per cent nationally, which is equivalent to the increase observed over the 1981-2014 period.

Between 2014 and 2038, the TD projection is that real GDP will grow at an annual rate of 1.7 per cent nationally, which can be decomposed into a 0.5 per cent annual increase in labour inputs, and the assumed annual growth of 1.2 per cent in labour productivity.[14]

Conference Board of Canada

The projections of real GDP growth produced by The Conference Board of Canada in the report released by the Council of the Federation in the summer of 2014 relied on the Conference Board's model of the Canadian economy (Beckman et al. 2014). These estimates were based upon a standard Cobb-Douglas production function and assumptions as to how total factor productivity (TFP), labour input, and capital would grow over time.

Projections for labour input growth were based on demographic projections, a forecast of the natural unemployment rate, forecasts of average hours worked, projections of changes in the average retirement age, and projections of participation rates by age group. Growth in capital was estimated by taking the existing capital stock and projecting investment (net of depreciation). The model results in increased investment in capital in response to rising wages in a tight labour market supported by high profits. The capital utilization rate is also expected to rise. The rate of TFP growth is assumed to be 0.6 per cent. This rate of TFP growth is supposedly based upon "recent historical performance," but such TFP growth is much higher than that recently experienced in Canada. Between 1977 and 2013, value-added TFP in the Canadian business sector grew at a compound annual rate of just 0.01 per cent. Between 2000 and 2013, the growth rate was -0.29 per cent annually.[15] If we used the same methodology, we would have assumed weaker TFP growth and consequently would have projected slower growth in real GDP.

---

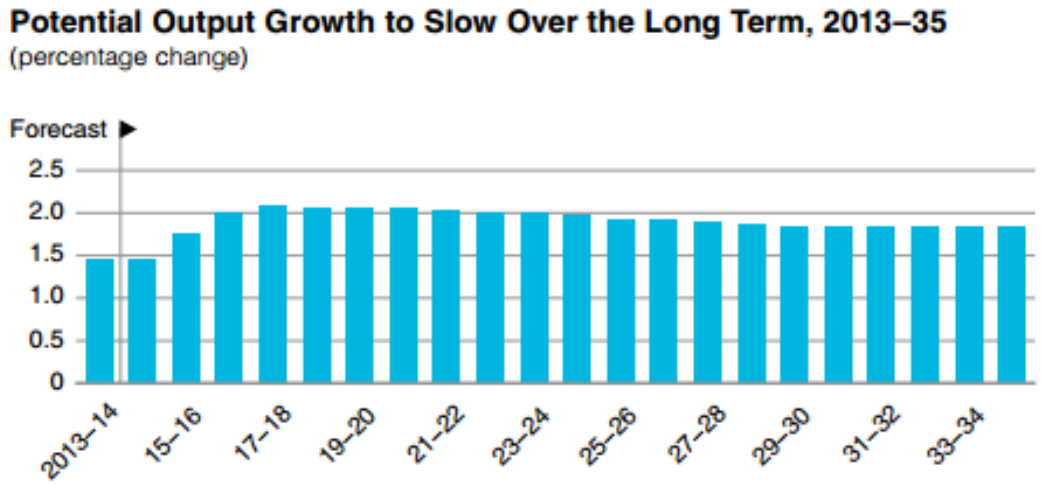
growth rates over the period 2014-2038 under the assumption that the growth rates projected by the PBO in each year are equal to the average growth rates over the period in which that year lies.

[14] The TD projections provide growth rates over two sub-periods (2013-2016 and 2016-2038), but the decomposition of growth into labour input growth and labour productivity growth is only provided for the latter sub-period. As such, the labour input and labour productivity growth rates discussed here are only for the second period, but these will be very similar to the growth rates over the entire 2014-2038 period.

[15] Calculations based on value-added multifactor productivity as reported in Statistics Canada's CANSIM table 383-0021.

The projected average annual grow rate of potential real GDP between 2014 and 2035 is 1.9 per cent annually. This growth can be decomposed into 0.3 percentage point due to increased labour input and 1.6 percentage points due to labour productivity growth (0.6 percentage point from TFP growth and 1.0 percentage point from increased capital intensity).

Chart 7: Projected Annual Potential Real GDP Growth in Canada, Conference Board of Canada, 2014-2035



Source: Chart 4 of Beckman et al. (2014)

Policy and Economic Analysis Program (PEAP)

Dungan and Murphy (2013) of the University of Toronto's Rotman School of Management produce a series of long-term economic forecasts for Canada. These projections are based upon a large-scale macroeconomic model (FOCUS) and involve a series of assumptions regarding the international economy, exchange rate policy, monetary and fiscal policy, labour force growth, and labour productivity growth. Rather than relying on official demographic projections from Statistics Canada, Dungan and Murphy generate their own demographic projections. They also make a set of assumptions as to how age- and gender-specific participation rates will evolve over time.

These projections assume a long-term labour productivity growth rate of 1.5 per cent, which is higher than in most other projections *and* half a percentage point higher than the assumed labour productivity growth rate built into the baseline projections presented in this section (1.0 per cent per year). This figure is not only above the recent Canadian experience, but out of the range of what has been recorded over most of the past three decades.[16]

The PEAP projections provide economic forecasts on an annual basis up to 2040. Real GDP is projected to grow at a compound annual rate of 2.2 per cent between 2014 and 2038, buoyed by the assumption that labour productivity growth in the future will be stronger than that

[16] While there are short periods where such growth rates were observed in Canada (*e.g.*, the late 1990s), this was not the case for most of the 1981-2014 period.

observed in recent decades. This growth in real GDP is projected to slow slightly from 2.3 per cent per year in the 2014-2026 sub-period to 2.1 per cent per year in the 2026-2038 sub-period.

Comparison of National Projections

Table 10 summarizes the projections that have been discussed in this section. One can see that our projections, the PBO projections, and the projections produced by TD Economics are quite similar in terms of growth in real GDP, labour productivity, and labour input. The Conference Board and PEAP project greater growth in real GDP, but this is largely because they assume greater growth in productivity.

Table 10: Summary of National Projections, 2014-2038

	Period	Real GDP	Labour Productivity	Labour Input	Working Age Population	Employment Rate	Average Hours Worked
TD	2016-2038	1.7	1.2	0.5	...	...	...
CSLS	2014-2038	1.6	1.0	0.6	0.9	-0.1	-0.2
PBO	2014-2038	1.6	1.1	0.6	0.7	-0.2	0.0
Conference Board	2014-2035	1.9	1.6	0.3	...	...	...
PEAP	2014-2038	2.2	1.5	0.7[a]	0.9	...	...

Note: [a] Employment growth.
Source: CSLS calculations based on projections from Cameron et al. (2014, PBO), Beckman et al. (2014, CBC), Dungan and Murphy (2013, PEAP), and Bartlett et al. (2015, TD)

B. Provincial Projections

There are very few publicly available long-term forecasts for all of the Canadian provinces. The Conference Board of Canada produces projections for each province, but they are not publicly available. Individual provincial governments also produce projections for their own provinces, but these are not consolidated and use varying methodologies. TD Economics has produced long-term forecasts for the provinces which we will discuss in this sub-section. We will also consider the projections of the Ontario Ministry of Finance for Ontario as an example of a provincial forecast as it is the largest province.

TD Economics

The TD Economics projections discussed above also included projections for six provinces and the Atlantic region for 2014-2038. The projections were produced in a similar manner to the national ones. Real GDP was projected using the medium (M1) scenario from Statistics Canada's population projections, projections of total hours worked based on recent trends in employment rates by age and sex, and an assumed rate of growth of labour productivity (output per hour worked) based on its long-run average.

Labour productivity and employment rates varied across the regions in the TD projections. The exact assumptions underlying these projections are not entirely clear. Differences in the specific assumptions may lead to differences between the CSLS and TD provincial projections. For example, we assume that the growth in participation rates by age

group in each province is the same as the growth in participation rates by age group for Canada as a whole. If the TD economics projections instead used province-specific trends, this could lead to significantly different estimates of labour input growth for some provinces. It is unclear what time periods were used to produce these trends or if the trends applied to each province were at the provincial or national level.

In contrast to the national projections, which were fairly similar to the CSLS projections in this report, some of the TD projections for real GDP growth are quite different from the CSLS projections at the provincial level (Table 11). In particular, the TD projection for real GDP growth is much lower for Manitoba (1.9 versus 2.4 per cent) and British Columbia (1.1 versus 2.1 per cent), driven primarily by lower assumed labour productivity growth.

Table 11: Projected Real GDP Growth by Province, TD Economics, Compound Average Annual Growth, Per Cent, Canada and the Provinces, 2016-2035/38

	Labour Input	Labour Productivity	Real GDP
Canada			
CSLS	0.6	1.0	1.6
TD	0.5	1.2	1.7
Atlantic Provinces			
CSLS	-0.5	1.3	0.8
TD	-0.8	1.2	0.4
Quebec			
CSLS	0.2	1.0	1.2
TD	0.1	0.8	0.9
Ontario			
CSLS	0.5	0.9	1.4
TD	0.3	1.2	1.5
Ministry of Finance	1.0	1.1	2.1
Manitoba			
CSLS	0.8	1.6	2.4
TD	0.7	1.2	1.9
Saskatchewan			
CSLS	0.4	1.4	1.8
TD	0.3	1.6	1.9
Alberta			
CSLS	1.5	0.8	2.3
TD	1.5	1.1	2.6
British Columbia			
CSLS	0.7	1.4	2.1
TD	0.5	0.5	1.1

Note: CSLS calculations based on Table 1 from Bartlett et al. (2015) and Ontario Ministry of Finance (2014). The time periods differ slightly across the projections: the CSLS projections are for the period 2014-2038, the TD projections of real GDP growth are for the period 2014-2038, the TD projections of labour input and labour productivity growth are for the period 2016-2038, and the Ontario Ministry of Finance projections are for the period 2014-2035.

Ontario Ministry of Finance

The Ontario Ministry of Finance (2014) has projected real GDP growth in Ontario between 2014 and 2035. These projections are based upon assumptions regarding the global economy, the U.S. economy, Canadian economic performance outside Ontario (assumed to be 2.2 per cent real GDP growth), oil prices, and interest rates. As per usual, projections of demographic changes and future participation rates based upon historical trends are also used.

The Ontario Ministry of Finance projected that Ontario will experience average annual real GDP growth of 2.1 per over the 2014-2035 period. This is much higher than the growth rates projected by the CSLS and TD Economics (1.4 and 1.5 per cent, respectively). Part of the difference between the Ministry of Finance and CSLS projections can be explained by their assumption of a higher growth rate for labour productivity (1.1 versus 0.9 per cent), but most of the difference is due to their higher projection for labour input growth (1.0 versus 0.5 per cent).

Growth in labour input in the Ministry of Finance projections can be decomposed as follows: -0.2 percentage point due to falling participation rates (compared to -0.1 percentage point in the CSLS projections); 0.1 percentage point due to falling unemployment rates (compared to 0.0 percentage point in the CSLS projections as unemployment rates are assumed to be constant); and 1.1 percentage point due to projected growth in the working age population (compared to 0.8 percentage point in the CSLS projections).[17] The higher growth of the working age population projected by the Ministry of Finance may reflect a higher assumed level of immigration. In addition, the Ministry of Finance does not project a decline in the average hours worked (they appear to use employment rather than hours as their measure of labour input), while the CSLS projects that average hours worked will decline at an annual rate of 0.2 per cent.

[17] Projected growth in the working age population is based on Ontario Ministry of Finance's own population projections. The CSLS projections use the projections from Statistics Canada's medium (M1) scenario.

IV. Implications for Budgetary Balance

This section examines the implications of the baseline projections for public sector balance in Canada and the provinces and territories. In particular, we look at the nominal GDP growth rates required for revenues to keep pace with expected growth in public expenditures, and then determine whether the baseline projections for nominal GDP growth exceed the required nominal GDP growth rates. This section is organized into three sub-sections. Each sub-section presents a different scenario for growth in public spending.

A. Base Case: Constant Real Per Capita Public Spending with Two Per Cent Growth in the Deflator for Public Spending

We will now examine whether nominal GDP growth in the provinces and territories is likely to be strong enough to finance public expenditures that are constant in real per capita terms. To do this, we assume that government revenues grow in line with nominal GDP.[18] The nominal GDP growth rates required for revenues to *keep pace with* growth in public expenditures are calculated as follows:

$$\Delta \ln(PY) \approx \Delta \ln(R) = \Delta \ln(G) = \Delta \ln(G/N) + \Delta \ln(N)$$

where PY is nominal GDP, R is nominal government revenues, G is nominal government expenditure, G/N is nominal per capita government expenditure, and N is the total population. Therefore, the growth in nominal GDP required to maintain spending that is constant in real per capita terms is simply equal to future growth in nominal per capita government expenditure (G/N), which is equivalent to the projected inflation rate (2.0 per cent) in this case, *plus* total population growth (N).[19] As before, we rely on Statistics Canada's medium (M1) scenario population to project total population growth for the 2014-2038 period.

It is important to note that we assume that provincial governments begin with balanced budgets in 2014-15, which is true for some (but not all) provinces (Appendix Table 9). If (1) a government is in budgetary balance at the beginning of the period and (2) public spending and nominal GDP (and hence revenues) are growing at the same pace, then the budget would remain in balance over the entire 2014-2036 period. However, if (1) the budget is in deficit (or surplus) at the beginning of the period and (2) public spending and nominal GDP are growing at the same

[18] In other words, we assume that the elasticity of total revenues with respect to nominal GDP growth is equal to one. The elasticity was calculated in detail for Ontario by the Commission on the Reform of Ontario's Public Services (2012) and was found to be slightly below one. In particular, personal income taxes were found to have an elasticity above one, corporate income and sales taxes were found to have elasticities of one, and specific taxes (applied to volumes rather than values) as well as user fees were found to have elasticities of well below one. Similarly, Ministère des Finances du Québec estimated an elasticity of own-source revenues to nominal GDP growth of slightly below one.

[19] We assume that the deflator for government expenditure will grow in line with the inflation rate during the 2014-2038 period. Therefore, if growth in *nominal* per capita government expenditure is equal to the inflation rate (2.0 per cent), then this corresponds to growth in *real* per capita government expenditure that is equal to zero.

pace, then the deficit (or surplus) would continuously grow over time.[20] Since almost all provinces have presented budgets showing balance will be restored within the next few years, this assumption is not overly worrisome.

Table 12 shows the nominal GDP growth rates required for revenues to keep pace with growth in public expenditures that are assumed constant in real per capita terms for the 2014-2026 and 2026-2038 periods (the **base case**). At the national level, the total population is projected to increase by 0.9 per cent per year in 2014-2026, while the deflator for public expenditure is assumed to exhibit annual growth of 2.0 per cent. Thus, nominal GDP must grow at an average annual pace of 3.0 per cent in 2014-2026 in order to finance spending that is constant in real per capita terms. Required nominal GDP growth falls to 2.8 per cent per year in 2026-2038, owing to slower projected growth in the total population.

For the 2014-2026 period, required annual growth in nominal GDP ranges from 1.6 per cent for Newfoundland and Labrador to 3.9 per cent for Alberta due to differences in projected total population growth across the provinces and territories. The required growth rates are lower for every jurisdiction in 2026-2038 compared to 2014-2026, because the total population is projected to grow more slowly in the later period. In particular, the required annual growth in nominal GDP for the provinces and territories ranges from 1.2 per cent for Newfoundland and Labrador to 3.7 per cent for Alberta in 2026-2038.

It is important to note that required growth in nominal GDP is lower than both the baseline projections for nominal GDP growth for almost every province and territory for the 2014-2038 period, indicating that the provinces and territories are expected to be able to fund public expenditures that are constant in real per capita terms (Table 13). The Northwest Territories is the only exception, which results from its slow productivity growth (-0.5 per cent).

[20] If (1) the budget is in deficit at the beginning of the period and (2) public spending and nominal GDP are growing at the same pace, then the debt-to-GDP ratio would converge toward a certain level that depends on both the size of the deficit (as a share of GDP) and the nominal GDP growth rate. This debt-to-GDP ratio is equal to:

$$(debt/GDP) = (deficit_t/GDP_t) \;/\; (\Delta GDP/GDP)$$

where $(debt/GDP)$ is the debt-to-GDP ratio, $deficit_t$ is the deficit in period *t*, GDP_t is nominal GDP in period *t*, and $(\Delta GDP/GDP)$ is the nominal GDP growth rate. Therefore, for example, if (1) a government started with a deficit-to-GDP ratio of 1.75 per cent and (2) the nominal GDP growth rate was 3.5 per cent per year, then the debt-to-GDP ratio would converge to 50 per cent ($50 \text{ per cent} = 1.75 \text{ per cent} / 3.5 \text{ per cent}$). Given the size of provincial government deficits in 2014-15 and the baseline projections for nominal GDP growth, only two provinces (Newfoundland and Labrador and Ontario) had fiscal deficits in 2014-15 large enough to lead to an increase in their debt-to-GDP ratio in 2014-2036.

Table 12: Nominal GDP Growth Required for Revenues to Grow in Line with Government Expenditures, Base case, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026				2026-2038			
	Nominal Per Capita Expenditure	**Total Population**	**Required Nominal GDP**	**Projected Nominal GDP (Baseline)**	**Nominal Per Capita Expenditure**	**Total Population**	**Required Nominal GDP**	**Projected Nominal GDP (Baseline)**
Canada	2.00	0.94	2.96	3.58	2.00	0.76	2.77	3.60
Newfoundland and Labrador	2.00	-0.42	1.57	2.56	2.00	-0.76	1.23	2.56
Prince Edward Island	2.00	0.92	2.94	3.66	2.00	0.71	2.72	3.59
Nova Scotia	2.00	0.09	2.09	2.70	2.00	-0.17	1.83	2.73
New Brunswick	2.00	0.11	2.11	2.79	2.00	-0.16	1.83	2.77
Quebec	2.00	0.68	2.69	3.20	2.00	0.45	2.46	3.25
Ontario	2.00	0.89	2.91	3.45	2.00	0.71	2.72	3.44
Manitoba	2.00	1.06	3.08	4.37	2.00	0.94	2.96	4.39
Saskatchewan	2.00	0.77	2.78	3.87	2.00	0.60	2.61	3.94
Alberta	2.00	1.87	3.91	4.37	2.00	1.63	3.66	4.32
British Columbia	2.00	1.11	3.13	4.18	2.00	0.93	2.95	4.19
Yukon	2.00	0.82	2.83	3.48	2.00	0.46	2.47	3.57
Northwest Territories	2.00	0.23	2.23	1.30	2.00	-0.11	1.89	1.20
Nunavut	2.00	1.15	3.17	3.85	2.00	0.99	3.01	3.67

Note: The base case assumes that public spending will be constant in real per capita terms, with growth in nominal per capita expenditure at the assumed inflation rate (2.0 per cent in every province and territory).
Source: CSLS calculations based on Statistics Canada data.

Table 13: Difference Between Projected and Required Nominal GDP Growth by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	Scen. A	Scen. B	Base Case	Scen. A	Scen. B
Canada	0.62	0.33	-0.37	0.83	0.52	-0.34
Newfoundland and Labrador	0.99	0.56	-0.51	1.34	0.88	-0.53
Prince Edward Island	0.72	0.38	-0.91	0.87	0.51	-1.18
Nova Scotia	0.60	0.28	-1.37	0.90	0.56	-1.53
New Brunswick	0.68	0.31	-0.67	0.94	0.55	-0.72
Quebec	0.51	0.36	-0.19	0.79	0.63	-0.05
Ontario	0.54	0.22	-0.38	0.72	0.38	-0.36
Manitoba	1.29	0.87	0.11	1.43	0.98	0.05
Saskatchewan	1.08	0.57	-0.37	1.33	0.77	-0.46
Alberta	0.46	-0.16	-1.25	0.67	-0.02	-1.48
British Columbia	1.05	0.95	0.37	1.24	1.14	0.50
Yukon	0.64	0.33	-0.29	1.10	0.75	-0.17
Northwest Territories	-0.93	-1.16	-1.78	-0.69	-0.93	-1.80
Nunavut	0.68	0.24	-0.47	0.66	0.17	-0.79

Note: This table provides the percentage point difference between the baseline projections for nominal GDP growth and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures. Three scenarios for required nominal GDP growth are included the table: the base case, alternative scenario A, and alternative scenario B.
Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

B. Alternative Scenario A: Constant Real Per Capita Public Spending with Two Per Cent Growth in the Deflator for Non-Health Spending and Historical Growth in the Deflator for Health Spending

Just as we conduct a sensitivity analysis for projected nominal GDP growth, we believe that sensitivities related to the question of whether the provinces and territories are expected to be able to finance future growth in government expenditure should be examined. For the purposes of these sensitivity analyses, public expenditures are divided into two components: health expenditures and non-health expenditures.

While it is reasonable to assume that the deflator for non-health spending will grow in line with projected inflation at 2.0 per cent per year, this is a difficult assumption to make for the deflator for health spending, which exhibited annual growth of 2.8 per cent at the national level during the 2000-2014 period according to CIHI data. Therefore, in the first alternative scenario, we allow the deflator for health spending to grow at the same pace as during the 2000-2014 period over the 2014-2038 period, while growth in the deflator for non-health spending remains at 2.0 per cent. In particular, we use the historical growth in the deflators for health spending by province and territory observed over the 2000-2014 period (Table 14).

As before, we are interested in determining the nominal GDP growth rates required for revenues to keep pace with growth in government expenditures that are constant in real per capita terms in the provinces and territories. However, by allowing half of program spending to grow more quickly than 2.0 per cent, we obtain significantly higher required growth rates for nominal GDP.

Table 14 shows the growth in nominal GDP required for revenues to keep pace with growth in government expenditures that are constant in real per capita terms. Unsurprisingly, the required rate of nominal GDP growth is higher than reported in Table 12 for every province and territory for the 2014-2038 period, as the deflator for health spending grew more quickly than 2.0 per cent per year in every province and territory in 2000-2014. At the national level, the total population is expected to experience annual growth of 0.9 per cent in 2014-2026, while the deflator for public expenditure is assumed to grow by 2.3 per cent per year. As a result, to fund public expenditures that are fixed in real per capita terms, nominal GDP must grow by 3.3 per cent per year in 2014-2026. In 2026-2038, required nominal GDP growth declines to 3.1 per cent per year due to a slowdown in population growth.

In the 2014-2026 period, required annual growth in nominal GDP for the provinces and territories range from 2.0 per cent for Newfoundland and Labrador to 4.5 per cent for Alberta. As before, the required growth rates are lower for every jurisdiction in the 2026-2038 period due to a slowdown in population growth.

Similar to the base case, required nominal GDP growth is below the baseline projections for nominal GDP growth for almost every jurisdiction for the 2014-2038 period, which signifies that the provinces and territories should be able to fund public expenditures that are constant in real per capita terms (Table 13). The two exceptions are Alberta and the Northwest Territories. In the case of Alberta, required nominal GDP growth is above projected nominal GDP growth for two reasons: 1) above-average growth in the deflator for health spending (3.5 per cent per year); and 2) weak labour productivity growth (0.8 per cent per year). However, these factors were related (either directly or indirectly) to the oil boom that took place in Alberta the 2000s. Therefore, it is unlikely that these trends will be exhibited over much of the 2014-2038 period. In the case of the Northwest Territories, the principal reason for the projected shortfall in nominal GDP growth is weak labour productivity growth.

Table 14: Nominal GDP Growth Required for Revenues to Grow in Line with Government Expenditures, using Historical Deflator Growth for Health Spending, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026						2026-2038					
	Nominal Per Capita Expenditure			Total Population	Required Nominal GDP	Projected Nominal GDP (Baseline)	Nominal Per Capita Expenditure			Total Population	Required Nominal GDP	Projected Nominal GDP (Baseline)
	Health	Non-health	Total				Health	Non-health	Total			
Canada	2.81	2.00	2.29	0.94	3.25	3.58	2.81	2.00	2.31	0.76	3.08	3.60
Newfoundland and Labrador	3.14	2.00	2.43	-0.42	1.99	2.56	3.14	2.00	2.46	-0.76	1.69	2.56
Prince Edward Island	2.90	2.00	2.34	0.92	3.28	3.66	2.90	2.00	2.36	0.71	3.08	3.59
Nova Scotia	2.75	2.00	2.33	0.09	2.42	2.70	2.75	2.00	2.34	-0.17	2.17	2.73
New Brunswick	2.99	2.00	2.36	0.11	2.47	2.79	2.99	2.00	2.39	-0.16	2.22	2.77
Quebec	2.54	2.00	2.15	0.68	2.84	3.20	2.54	2.00	2.15	0.45	2.61	3.25
Ontario	2.82	2.00	2.32	0.89	3.23	3.45	2.82	2.00	2.33	0.71	3.06	3.44
Manitoba	3.01	2.00	2.41	1.06	3.50	4.37	3.01	2.00	2.44	0.94	3.41	4.39
Saskatchewan	3.32	2.00	2.51	0.77	3.29	3.87	3.32	2.00	2.55	0.60	3.17	3.94
Alberta	3.55	2.00	2.61	1.87	4.53	4.37	3.55	2.00	2.68	1.63	4.35	4.32
British Columbia	2.23	2.00	2.09	1.11	3.23	4.18	2.23	2.00	2.10	0.93	3.05	4.19
Yukon	3.41	2.00	2.31	0.82	3.14	3.48	3.41	2.00	2.35	0.46	2.82	3.57
Northwest Territories	3.00	2.00	2.22	0.23	2.45	1.30	3.00	2.00	2.24	-0.11	2.13	1.20
Nunavut	3.39	2.00	2.44	1.15	3.62	3.85	3.39	2.00	2.49	0.99	3.50	3.67

Note: Alternative scenario A assumes that public spending – divided into health and non-health spending – will be constant in real per capita terms, with growth in nominal per capita non-health spending at the assumed inflation rate (2.0 per cent) and nominal per capita health spending at the historical growth rates in the deflator for health spending in 2000-2014 (which range from 2.2 to 3.6 per cent).

Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

C. Alternative Scenario B: Historical Growth in Nominal Per Capita Health Spending and Constant Real Per Capita Non-Health Spending with Two Per Cent Growth in the Deflator for Non-Health Spending

In the second alternative scenario, we allow for positive growth in health spending in real per capita terms, as we believe that the assumption of zero growth in real per capita spending is overly restrictive. Indeed, this assumption implies: 1) that there is no real enrichment in programs over a twenty-four-year period; 2) that none of the gains from productivity growth will go to augmenting public services; 3) that the ageing of the population will not exert any upward pressure on real per capita health spending; and 4) that we will observe a persistent decline in the ratio of provincial/territorial spending to GDP.[21] Therefore, this assumption is inconsistent with recent history other than periods of fiscal austerity.[22] Furthermore, it would likely be extremely difficult to achieve constant overall real per capita spending given the tendency of health spending, which accounts for about half of provincial/territorial program spending, to exhibit strong growth in real per capita terms. Several studies suggest that "status quo" growth in nominal health spending will be in the range of 6.0 to 6.5 per cent, roughly half of which is due to real enrichment of health programs (*e.g.* Clavet *et al*., 2014; Drummond, 2011; Drummond and Burleton, 2010; Dodge and Dion, 2011; Godbout *et al*., 2007; Godbout *et al*., 2014).

Over the projection horizon, nominal per capita health expenditures are assumed to grow at the historical growth rates observed over the 2000-2014 period by province and territory. Between 2000 and 2014, annual growth in nominal per capita health spending in the provinces and territories ranged from 3.6 to 6.1 per cent, based on growth in the deflator for health spending of 2.2 to 3.5 per cent per year and growth in real per capita health spending of 1.3 to 3.2 per cent per year (Table 15).[23] Growth in health spending could be even higher in the coming years due to large increases in the population aged 70 years and over. However, it is also possible that governments will find ways to lower health costs in the face of this fiscal challenge. As before, growth in the deflator for non-health spending is set at 2.0 per cent. Therefore, we assume that there is no real enrichment in non-health programs over the 2014-2038 period.

Table 15 presents the results of the sensitivity analysis for Canada and the provinces and territories for the 2014-2026 and 2026-2038 periods. More specifically, it provides the growth in nominal GDP required for revenues to keep pace with growth in total government expenditures; however, unlike Table 12 and Table 14, government expenditures are allowed to increase in real per capita terms. At the national level, nominal per capita total spending is assumed to grow by

---

[21] If real per capita health spending on each age group was fixed over time, then the ageing of the population would necessitate an increase in aggregate real per capita health spending given that health spending is, on average, almost five times higher for older individuals according to CIHI data. In particular, per capita health spending on individuals aged 70+ years was $11,781 in 2012, compared to $2,494 for individuals aged 0-74 years. Therefore, zero growth in real per capita health spending would require a decrease in real per capita spending on some (or all) age groups.

[22] While it is true that health spending has been constrained in recent years, with negative growth in real per capita health spending in most provinces between 2011 and 2014, this was largely driven by conditions that are unlikely to continue over the 2014-2038 period, including: 1) the widespread implementation of fiscal austerity policies; and 2) special circumstances related to drug costs (*e.g.*, some common expensive drugs coming off patent; a slowdown in the emergence of new drugs; and policies aimed at getting lower prices).

[23] Therefore, after accounting for population growth, growth in nominal health spending was in the range of 4.7 to 7.9 per cent per year during the 2000-2014 period, which is similar to the "status quo" range of 6.0 to 6.5 per cent.

3.0 per cent per year in 2014-2026. After adding population growth (0.9 per cent per year), we determine that nominal total spending will increase by 3.9 per cent per year in 2014-2026. Therefore, nominal GDP must grow by 3.9 per cent per year in 2014-2026 in order for revenues to grow in line with total spending. Despite the slowdown in population growth from 2014-2026 to 2026-2038, required growth in nominal GDP is maintained at 3.9 per cent per year in 2026-2038 due to an increase in nominal per capita growth in total spending (which is related to the rising share of health spending in total spending over time).

In the 2014-2026 period, required annual growth in nominal GDP for the provinces and territories ranges from 3.1 per cent for Newfoundland and Labrador to 5.6 per cent for Alberta. Unlike the previous two set of results, the required growth rates are not lower for every jurisdiction in the 2026-2038 period, as the increase in nominal per capita spending growth from 2014-2026 to 2026-2038 is often more than enough to compensate for the slowdown in population growth.

In contrast to the base case and the alternative scenario A, required nominal GDP growth is well above the baseline projections for nominal GDP growth for almost every jurisdiction in 2014-2038. In other words, almost every jurisdiction is expected to be unable to finance public expenditures under the baseline projections (Table 13), unless they raise taxes, cut real per non-health expenditure programs in real per capita terms, manage health spending more efficiently, obtain more federal transfers, or are successful in accelerating employment and productivity growth through appropriate fiscal measures. The only exceptions are Manitoba and British Columbia, which are projected to experience annual nominal GDP growth rates that are 0.1 and 0.4 percentage point (respectively) above what is required for revenues to keep pace with growth in total spending in 2014-2026.

The unweighted average projected shortfall between required nominal GDP growth and the baseline projections for nominal GDP growth in the remaining provinces is -0.7 percentage point in 2014-2026 and -0.8 percentage point in 2026-2038. Between 2014 and 2026, the Northwest Territories are expected to exhibit the largest shortfall (-1.8 percentage points), followed by Nova Scotia (-1.4 percentage points), Alberta (-1.3 percentage points), and Prince Edward Island (-0.9 percentage point). As before, the principal reason for the large shortfall in the Northwest Territories is weak labour productivity growth. In contrast, for Alberta, Nova Scotia and Prince Edward Island, the projected shortfalls are primarily driven by above-average growth in nominal per capita health spending (5.9, 6.1 and 5.9 per cent per year, respectively), which is unlikely to persist throughout the 2014-2038 period.

Table 15: Nominal GDP Growth Required for Revenues to Grow in Line with Government Expenditures, using Historical Nominal Per Capita Growth for Health Spending, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026						2026-2038					
	Nominal Per Capita Expenditure			Total Population	Required Nominal GDP	Projected Nominal GDP (Baseline)	Nominal Per Capita Expenditure			Total Population	Required Nominal GDP	Projected Nominal GDP (Baseline)
	Health	Non-health	Total				Health	Non-health	Total			
Canada	4.56	2.00	2.98	0.94	3.94	3.58	4.56	2.00	3.16	0.76	3.94	3.60
Newfoundland and Labrador	5.64	2.00	3.50	-0.42	3.06	2.56	5.64	2.00	3.88	-0.76	3.09	2.56
Prince Edward Island	5.88	2.00	3.61	0.92	4.57	3.66	5.88	2.00	4.04	0.71	4.78	3.59
Nova Scotia	6.07	2.00	3.97	0.09	4.07	2.70	6.07	2.00	4.44	-0.17	4.26	2.73
New Brunswick	5.34	2.00	3.34	0.11	3.45	2.79	5.34	2.00	3.66	-0.16	3.49	2.77
Quebec	4.35	2.00	2.69	0.68	3.39	3.20	4.35	2.00	2.83	0.45	3.30	3.25
Ontario	4.26	2.00	2.92	0.89	3.83	3.45	4.26	2.00	3.06	0.71	3.79	3.44
Manitoba	4.66	2.00	3.16	1.06	4.25	4.37	4.66	2.00	3.36	0.94	4.34	4.39
Saskatchewan	5.46	2.00	3.44	0.77	4.23	3.87	5.46	2.00	3.78	0.60	4.40	3.94
Alberta	5.90	2.00	3.68	1.87	5.62	4.37	5.90	2.00	4.12	1.63	5.81	4.32
British Columbia	3.56	2.00	2.66	1.11	3.81	4.18	3.56	2.00	2.73	0.93	3.69	4.19
Yukon	5.77	2.00	2.92	0.82	3.77	3.48	5.77	2.00	3.26	0.46	3.73	3.57
Northwest Territories	5.37	2.00	2.85	0.23	3.08	1.30	5.37	2.00	3.11	-0.11	3.00	1.20
Nunavut	5.32	2.00	3.14	1.15	4.33	3.85	5.32	2.00	3.44	0.99	4.47	3.67

Note: Alternative scenario B assumes that non-health spending will be constant in real per capita terms, with growth in nominal per capita non-health spending at the assumed inflation rate (2.0 per cent). However, it assumes that health will be positive in real per capita terms, with growth in nominal per capita health spending at the historical growth rates in nominal per capita health spending in 2000-2014 (which range from 3.6 to 6.1 per cent).

Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

V. Sensitivity Analysis

This section presents the results of the various sensitivity analyses, which provide alternative scenarios for economic growth in Canada, the provinces and the territories for the 2014-2038 period. It is organized into seven sub-sections. Each of the first six sub-sections presents the results of an alternative scenario for economic growth. The seventh sub-section briefly summarizes the results of the alternative scenarios and compares them to the base case.

A. Alternative Scenario 1: Historical Inflation Rates

In the baseline projections, we assumed that the inflation rate (defined as growth in the GDP deflator) will be 2.0 per cent for the 2014-2038 period. In alternative scenario 1, the inflation rates are based on historical growth rates by province and territory for the 2000-2014 period. As a result, projected nominal GDP growth is lower in some provinces and higher in other provinces, particularly the oil-producing provinces (Table 16). The use of historical inflation rates implicitly assumes the continuation of the strong growth in commodity prices observed over much of the 2000-2014 period.

At the time of writing, official estimates of GDP deflators for the provinces and territories were only available for 2000-2013. However, we used TD forecasts for GDP deflator growth in 2014 to estimate the inflation rate in 2000-2014 (Alexander, Burleton and Bendiner, 2015). Unfortunately, TD forecasts for GDP deflator growth in 2014 were unavailable for the territories, so we simply used GDP deflator growth in 2000-2013 for the territories. The forecasts for the GDP deflator in 2014 will be replaced with actual data when they become available.

Table 16: Long-term Economic Growth Projections, using Historical GDP Deflator Growth by Province and Territory, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Real GDP	GDP Deflator	Nominal GDP	Real GDP	GDP Deflator	Nominal GDP
Canada	1.54	2.21	3.79	1.57	2.21	3.82
Newfoundland and Labrador	0.54	4.06	4.63	0.55	4.06	4.64
Prince Edward Island	1.63	2.26	3.92	1.56	2.26	3.85
Nova Scotia	0.69	1.94	2.64	0.71	1.94	2.67
New Brunswick	0.77	2.14	2.93	0.76	2.14	2.91
Quebec	1.18	1.90	3.10	1.22	1.90	3.15
Ontario	1.42	1.78	3.23	1.41	1.78	3.22
Manitoba	2.32	2.17	4.54	2.34	2.17	4.56
Saskatchewan	1.83	4.17	6.08	1.90	4.17	6.15
Alberta	2.32	3.37	5.77	2.28	3.37	5.72
British Columbia	2.14	1.77	3.95	2.15	1.77	3.96
Yukon	1.45	2.03	3.51	1.54	2.03	3.60
Northwest Territories	-0.69	2.06	1.36	-0.79	2.06	1.26
Nunavut	1.81	3.53	5.40	1.64	3.53	5.22

Source: CSLS calculations based on Statistics Canada data.

Table 17 shows the differences between the projections for nominal GDP growth (from alternative scenario 1) and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures by province and territory for the 2014-2026 and 2026-2038 periods.

Table 17: Difference Between Projected and Required Nominal GDP Growth by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	Scen. A	Scen. B	Base Case	Scen. A	Scen. B
Canada	0.84	0.54	-0.15	1.05	0.74	-0.12
Newfoundland and Labrador	3.06	2.64	1.57	3.41	2.95	1.55
Prince Edward Island	0.98	0.64	-0.65	1.13	0.77	-0.93
Nova Scotia	0.55	0.22	-1.42	0.84	0.50	-1.59
New Brunswick	0.82	0.45	-0.53	1.08	0.69	-0.58
Quebec	0.41	0.26	-0.29	0.69	0.53	-0.15
Ontario	0.32	0.00	-0.61	0.49	0.16	-0.58
Manitoba	1.46	1.04	0.29	1.60	1.15	0.23
Saskatchewan	3.30	2.79	1.85	3.55	2.99	1.75
Alberta	1.86	1.23	0.14	2.07	1.38	-0.08
British Columbia	0.82	0.72	0.14	1.01	0.91	0.27
Yukon	0.67	0.36	-0.26	1.13	0.78	-0.13
Northwest Territories	-0.87	-1.10	-1.72	-0.63	-0.87	-1.74
Nunavut	2.23	1.79	1.08	2.21	1.72	0.76

Note: There are three scenarios for required nominal GDP growth: the base case, alternative scenario A and alternative scenario B. Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

B. Alternative Scenario 2: Larger Declines in Average Hours Worked

For the baseline projections, we assumed that average hours worked by age group will grow at the same pace as in the 1976-2014 period.[24] In alternative scenario 2, we use growth rates in average hours worked by age group from 2000-2014 to project labour force growth rather than growth rates from 1976-2014. In 2000-2014, the fall in average hours worked was much larger than in 1976-2014 for the prime-age and older age groups, while the young age group experienced a (slightly) smaller decline in average hours worked in 2000-2014 (Table 18). As a result, we obtain significantly slower labour input growth and, in turn, significantly slower growth in real and nominal GDP in 2014-2038 (Table 19).

Table 18: Average Actual Hours Worked, Compound Annual Growth Rates, Per Cent, Canada, 1976-2014

	1976-2000	2000-2014	1976-2014
Young Workers (15-24)	-0.57	-0.53	-0.56
Prime-age Workers (25-54)	0.01	-0.40	-0.14
Older Workers (55+)	-0.12	-0.46	-0.25

Source: CSLS calculations based on Statistics Canada data.

[24] We also assumed that every province and territory will exhibit the national growth rates in average hours worked by age group over the projection horizon. However, we do not alter this assumption here.

Table 19: Long-term Economic Growth Projections, using Hours Worked Growth by Age Group for 2000-2014, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	0.33	0.99	1.32	0.36	0.99	1.35
Newfoundland and Labrador	-1.31	1.66	0.32	-1.30	1.66	0.33
Prince Edward Island	0.40	1.01	1.41	0.33	1.01	1.34
Nova Scotia	-0.64	1.11	0.47	-0.61	1.11	0.50
New Brunswick	-0.61	1.16	0.55	-0.62	1.16	0.54
Quebec	-0.01	0.96	0.95	0.04	0.96	1.00
Ontario	0.32	0.88	1.20	0.31	0.88	1.19
Manitoba	0.55	1.54	2.10	0.58	1.54	2.12
Saskatchewan	0.19	1.42	1.61	0.26	1.42	1.69
Alberta	1.29	0.80	2.10	1.25	0.80	2.06
British Columbia	0.51	1.40	1.91	0.52	1.40	1.92
Yukon	0.02	1.20	1.22	0.11	1.20	1.31
Northwest Territories	-0.41	-0.50	-0.91	-0.51	-0.50	-1.00
Nunavut	0.62	0.97	1.60	0.45	0.97	1.43

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP (2 Per Cent GDP Deflator Growth)

	2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	1.32	2.00	3.35	1.35	2.00	3.38
Newfoundland and Labrador	0.32	2.00	2.33	0.33	2.00	2.34
Prince Edward Island	1.41	2.00	3.44	1.34	2.00	3.37
Nova Scotia	0.47	2.00	2.47	0.50	2.00	2.51
New Brunswick	0.55	2.00	2.56	0.54	2.00	2.55
Quebec	0.95	2.00	2.97	1.00	2.00	3.02
Ontario	1.20	2.00	3.22	1.19	2.00	3.21
Manitoba	2.10	2.00	4.14	2.12	2.00	4.16
Saskatchewan	1.61	2.00	3.64	1.69	2.00	3.72
Alberta	2.10	2.00	4.14	2.06	2.00	4.10
British Columbia	1.91	2.00	3.95	1.92	2.00	3.96
Yukon	1.22	2.00	3.24	1.31	2.00	3.34
Northwest Territories	-0.91	2.00	1.07	-1.00	2.00	0.98
Nunavut	1.60	2.00	3.63	1.43	2.00	3.45

Note: Labour productivity is defined as real GDP per hour worked.

Source: CSLS calculations based on Statistics Canada data.

Table 20 shows the differences between the projections for nominal GDP growth (from alternative scenario 2) and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures by province and territory for the 2014-2026 and 2026-2038 periods.

Table 20: Difference Between Projected and Required Nominal GDP Growth by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	**Scen. A**	**Scen. B**	**Base Case**	**Scen. A**	**Scen. B**
Canada	0.39	0.10	-0.60	0.61	0.30	-0.56
Newfoundland and Labrador	0.76	0.34	-0.73	1.11	0.65	-0.75
Prince Edward Island	0.50	0.16	-1.13	0.65	0.29	-1.41
Nova Scotia	0.38	0.05	-1.59	0.68	0.34	-1.76
New Brunswick	0.45	0.09	-0.89	0.71	0.32	-0.94
Quebec	0.28	0.14	-0.41	0.56	0.41	-0.27
Ontario	0.31	-0.01	-0.61	0.49	0.15	-0.58
Manitoba	1.06	0.64	-0.11	1.21	0.76	-0.17
Saskatchewan	0.86	0.35	-0.59	1.11	0.56	-0.68
Alberta	0.23	-0.39	-1.48	0.44	-0.25	-1.71
British Columbia	0.82	0.72	0.15	1.01	0.91	0.27
Yukon	0.41	0.10	-0.52	0.87	0.52	-0.39
Northwest Territories	-1.16	-1.38	-2.01	-0.91	-1.15	-2.02
Nunavut	0.46	0.01	-0.70	0.44	-0.05	-1.01

Note: There are three scenarios for required nominal GDP growth: the base case, alternative scenario A and alternative scenario B. Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

C. Alternative Scenario 3: Convergence in Labour Productivity Growth

Alternative scenario 3 shows how the results of the provincial and territorial projections change if we assume that the national labour productivity growth rate from 2000-2014 (1.0 per cent per year) is exhibited in every province and territory over the projection horizon. In this case, differences in real and nominal GDP growth now solely reflect differences in total hours worked growth (Table 21). In contrast, in the baseline projections, we used historical labour productivity growth rates by province and territory from 2000-2014.

Table 22 shows the differences between the projections for nominal GDP growth (from alternative scenario 3) and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures by province and territory for the 2014-2026 and 2026-2038 periods.

Table 21: Long-term Economic Growth Projections, Convergence in Labour Productivity Growth, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	0.55	0.99	1.54	0.57	0.99	1.57
Newfoundland and Labrador	-1.09	0.99	-0.11	-1.09	0.99	-0.10
Prince Edward Island	0.62	0.99	1.61	0.55	0.99	1.55
Nova Scotia	-0.42	0.99	0.56	-0.39	0.99	0.59
New Brunswick	-0.39	0.99	0.60	-0.40	0.99	0.59
Quebec	0.22	0.99	1.21	0.26	0.99	1.26
Ontario	0.54	0.99	1.54	0.53	0.99	1.52
Manitoba	0.77	0.99	1.77	0.79	0.99	1.79
Saskatchewan	0.41	0.99	1.40	0.47	0.99	1.47
Alberta	1.51	0.99	2.51	1.47	0.99	2.47
British Columbia	0.73	0.99	1.73	0.73	0.99	1.73
Yukon	0.24	0.99	1.24	0.33	0.99	1.33
Northwest Territories	-0.19	0.99	0.80	-0.29	0.99	0.70
Nunavut	0.84	0.99	1.84	0.67	0.99	1.66

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP (2 Per Cent GDP Deflator Growth)

	2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	1.54	2.00	3.58	1.57	2.00	3.60
Newfoundland and Labrador	-0.11	2.00	1.88	-0.10	2.00	1.89
Prince Edward Island	1.61	2.00	3.65	1.55	2.00	3.58
Nova Scotia	0.56	2.00	2.58	0.59	2.00	2.61
New Brunswick	0.60	2.00	2.61	0.59	2.00	2.60
Quebec	1.21	2.00	3.23	1.26	2.00	3.28
Ontario	1.54	2.00	3.57	1.52	2.00	3.55
Manitoba	1.77	2.00	3.80	1.79	2.00	3.83
Saskatchewan	1.40	2.00	3.43	1.47	2.00	3.50
Alberta	2.51	2.00	4.57	2.47	2.00	4.52
British Columbia	1.73	2.00	3.76	1.73	2.00	3.77
Yukon	1.24	2.00	3.26	1.33	2.00	3.35
Northwest Territories	0.80	2.00	2.82	0.70	2.00	2.71
Nunavut	1.84	2.00	3.88	1.66	2.00	3.70

Note: Labour productivity is defined as real GDP per hour worked.
Source: CSLS calculations based on Statistics Canada data.

Table 22: Difference Between Projected and Required Nominal GDP Growth by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	Scen. A	Scen. B	Base Case	Scen. A	Scen. B
Canada	0.62	0.33	-0.37	0.83	0.52	-0.34
Newfoundland and Labrador	0.31	-0.11	-1.18	0.66	0.21	-1.20
Prince Edward Island	0.70	0.37	-0.92	0.86	0.50	-1.20
Nova Scotia	0.48	0.16	-1.49	0.78	0.44	-1.66
New Brunswick	0.50	0.14	-0.84	0.76	0.37	-0.89
Quebec	0.54	0.40	-0.15	0.82	0.67	-0.02
Ontario	0.66	0.34	-0.27	0.83	0.50	-0.24
Manitoba	0.72	0.31	-0.45	0.87	0.42	-0.51
Saskatchewan	0.64	0.14	-0.81	0.89	0.34	-0.90
Alberta	0.66	0.03	-1.06	0.87	0.18	-1.28
British Columbia	0.63	0.53	-0.05	0.82	0.72	0.08
Yukon	0.43	0.12	-0.50	0.89	0.54	-0.38
Northwest Territories	0.59	0.36	-0.26	0.83	0.58	-0.28
Nunavut	0.70	0.26	-0.45	0.69	0.19	-0.77

Note: There are three scenarios for required nominal GDP growth: the base case, alternative scenario A and alternative scenario B. Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

D. Alternative Scenario 4: High Population Growth

In the baseline projections, we used Statistics Canada's medium (M1) scenario to project growth in the working age population.[25] Now, we will test the sensitivity of the projections to alternative population growth projections – namely, the high- and low-growth scenarios.

Alternative scenario 4 uses the high-growth scenario project growth in the working age population in 2014-2038.[26] The high-growth scenario projects working age population growth of 1.2 per cent per year between 2014 and 2038, well above the projection of the M1 scenario (0.9 per cent per year). Given that working age population growth is more rapid in this case compared to the baseline, hours worked growth is higher in every province and territory, which, in turn, raises real and nominal GDP growth in every province and territory (Table 23).

Table 24 shows the differences between the projections for nominal GDP growth (from alternative scenario 4) and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures by province and territory for the 2014-2026 and 2026-2038 periods.

[25] The medium (M1) scenario is based on the following assumptions: interprovincial migration trends observed over the 1991-2011 period will persist in 2014-2038; the total fertility rate reaches 1.67 births per woman in 2021 and then remains constant; life expectancy reaches 89.1 years for females and 87.5 years for males in 2062; and the net international immigration rate reaches 0.56 per cent in 2022 and then remains constant.

[26] The high-growth scenario is based on the following assumptions: interprovincial migration trends observed over the 1991-2011 period will persist in 2014-2038; the total fertility rate reaches 1.88 births per woman in 2021 and then remains constant; life expectancy reaches 91.9 years for females and 89.9 years for males in 2062; and the net international immigration rate reaches 0.69 per cent in 2022 and then remains constant.

Table 23: Long-term Economic Growth Projections, with High Population Growth, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	0.81	0.99	1.81	0.95	0.99	1.95
Newfoundland and Labrador	-0.99	1.66	0.65	-0.89	1.66	0.76
Prince Edward Island	0.84	1.01	1.86	0.89	1.01	1.90
Nova Scotia	-0.29	1.11	0.82	-0.17	1.11	0.94
New Brunswick	-0.27	1.16	0.89	-0.19	1.16	0.97
Quebec	0.41	0.96	1.37	0.59	0.96	1.55
Ontario	0.82	0.88	1.70	0.92	0.88	1.81
Manitoba	1.01	1.54	2.56	1.20	1.54	2.75
Saskatchewan	0.60	1.42	2.03	0.80	1.42	2.23
Alberta	1.76	0.80	2.58	1.82	0.80	2.63
British Columbia	1.13	1.40	2.55	1.21	1.40	2.63
Yukon	0.57	1.20	1.78	0.55	1.20	1.75
Northwest Territories	-0.04	-0.50	-0.54	-0.05	-0.50	-0.55
Nunavut	0.90	0.97	1.87	1.03	0.97	2.01

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP (2 Per Cent GDP Deflator Growth)

	2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	1.81	2.00	3.85	1.95	2.00	3.99
Newfoundland and Labrador	0.65	2.00	2.66	0.76	2.00	2.77
Prince Edward Island	1.86	2.00	3.89	1.90	2.00	3.94
Nova Scotia	0.82	2.00	2.84	0.94	2.00	2.96
New Brunswick	0.89	2.00	2.91	0.97	2.00	2.99
Quebec	1.37	2.00	3.40	1.55	2.00	3.58
Ontario	1.70	2.00	3.74	1.81	2.00	3.84
Manitoba	2.56	2.00	4.61	2.75	2.00	4.81
Saskatchewan	2.03	2.00	4.07	2.23	2.00	4.27
Alberta	2.58	2.00	4.63	2.63	2.00	4.69
British Columbia	2.55	2.00	4.60	2.63	2.00	4.68
Yukon	1.78	2.00	3.81	1.75	2.00	3.79
Northwest Territories	-0.54	2.00	1.45	-0.55	2.00	1.44
Nunavut	1.87	2.00	3.91	2.01	2.00	4.05

Note: Labour productivity is defined as real GDP per hour worked.

Source: CSLS calculations based on Statistics Canada data.

Table 24: Difference Between Projected and Required Nominal GDP Growth by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	**Scen. A**	**Scen. B**	**Base Case**	**Scen. A**	**Scen. B**
Canada	0.89	0.60	-0.10	1.22	0.91	0.05
Newfoundland and Labrador	1.09	0.66	-0.40	1.54	1.08	-0.32
Prince Edward Island	0.95	0.61	-0.68	1.22	0.86	-0.84
Nova Scotia	0.74	0.42	-1.23	1.13	0.79	-1.30
New Brunswick	0.80	0.43	-0.54	1.16	0.77	-0.50
Quebec	0.71	0.56	0.01	1.12	0.97	0.29
Ontario	0.83	0.51	-0.10	1.12	0.78	0.05
Manitoba	1.53	1.11	0.36	1.85	1.40	0.47
Saskatchewan	1.28	0.77	-0.17	1.67	1.11	-0.13
Alberta	0.72	0.10	-0.99	1.03	0.34	-1.12
British Columbia	1.47	1.37	0.79	1.73	1.63	0.99
Yukon	0.98	0.67	0.05	1.32	0.97	0.06
Northwest Territories	-0.78	-1.00	-1.63	-0.45	-0.69	-1.56
Nunavut	0.74	0.29	-0.42	1.04	0.54	-0.42

Note: There are three scenarios for required nominal GDP growth: the base case, alternative scenario A and alternative scenario B. Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

E. Alternative Scenario 5: Low Population Growth

Alternative scenario 5 employs Statistics Canada's low-growth scenario to project growth in the working age population over the 2014-2038 period.[27] The low-growth scenario projects working age population growth of 0.7 per cent per year in 2014-2038, 0.2 percentage point below the projection of the M1 scenario (0.9 per cent per year). Given that growth in the working age population is slower in this scenario compared to the baseline, growth in total hours worked is higher in every province and territory, which, in turn, increases growth in real and nominal GDP in every province and territory (Table 25).

Table 24 shows the differences between the projections for nominal GDP growth (from alternative scenario 5) and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures by province and territory for the 2014-2026 and 2026-2038 periods. It is important to note that the required nominal GDP growth rates are based on the M1 scenario for population growth, which limits the comparability of alternative scenario 5 with the three scenarios for spending growth.

[27] The low-growth scenario is based on the following assumptions: interprovincial migration trends observed over the 1991-2011 period will persist in 2014-2038; the total fertility rate reaches 1.53 births per woman in 2021 and then remains constant; life expectancy reaches 87.1 years for females and 85.9 years for males in 2062; and the net international immigration rate reaches 0.34 per cent in 2022 and then remains constant.

Table 25: Long-term Economic Growth Projections, with Low Population Growth, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	0.23	0.99	1.23	0.13	0.99	1.12
Newfoundland and Labrador	-1.17	1.66	0.47	-1.26	1.66	0.38
Prince Edward Island	0.33	1.01	1.34	0.11	1.01	1.12
Nova Scotia	-0.55	1.11	0.56	-0.62	1.11	0.49
New Brunswick	-0.50	1.16	0.66	-0.61	1.16	0.55
Quebec	-0.02	0.96	0.94	-0.09	0.96	0.87
Ontario	0.20	0.88	1.08	0.05	0.88	0.93
Manitoba	0.43	1.54	1.97	0.26	1.54	1.81
Saskatchewan	0.16	1.42	1.58	0.09	1.42	1.51
Alberta	1.21	0.80	2.02	1.03	0.80	1.84
British Columbia	0.26	1.40	1.67	0.14	1.40	1.55
Yukon	0.02	1.20	1.22	-0.21	1.20	0.99
Northwest Territories	-0.29	-0.50	-0.78	-0.58	-0.50	-1.07
Nunavut	0.71	0.97	1.69	0.50	0.97	1.47

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP (2 Per Cent GDP Deflator Growth)

	2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	1.23	2.00	3.25	1.12	2.00	3.14
Newfoundland and Labrador	0.47	2.00	2.47	0.38	2.00	2.39
Prince Edward Island	1.34	2.00	3.36	1.12	2.00	3.14
Nova Scotia	0.56	2.00	2.57	0.49	2.00	2.49
New Brunswick	0.66	2.00	2.67	0.55	2.00	2.56
Quebec	0.94	2.00	2.96	0.87	2.00	2.88
Ontario	1.08	2.00	3.10	0.93	2.00	2.95
Manitoba	1.97	2.00	4.01	1.81	2.00	3.84
Saskatchewan	1.58	2.00	3.62	1.51	2.00	3.54
Alberta	2.02	2.00	4.06	1.84	2.00	3.88
British Columbia	1.67	2.00	3.70	1.55	2.00	3.58
Yukon	1.22	2.00	3.25	0.99	2.00	3.01
Northwest Territories	-0.78	2.00	1.20	-1.07	2.00	0.90
Nunavut	1.69	2.00	3.72	1.47	2.00	3.50

Note: Labour productivity is defined as real GDP per hour worked.

Source: CSLS calculations based on Statistics Canada data.

Table 26: Difference Between Projected and Required Nominal GDP Growth by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	Scen. A	Scen. B	Base Case	Scen. A	Scen. B
Canada	0.30	0.00	-0.69	0.37	0.06	-0.80
Newfoundland and Labrador	0.90	0.48	-0.59	1.16	0.70	-0.70
Prince Edward Island	0.42	0.08	-1.21	0.42	0.06	-1.64
Nova Scotia	0.47	0.15	-1.50	0.67	0.33	-1.77
New Brunswick	0.56	0.20	-0.78	0.72	0.33	-0.93
Quebec	0.26	0.12	-0.43	0.42	0.27	-0.41
Ontario	0.19	-0.13	-0.74	0.23	-0.11	-0.84
Manitoba	0.93	0.51	-0.24	0.88	0.44	-0.49
Saskatchewan	0.83	0.32	-0.62	0.93	0.38	-0.86
Alberta	0.15	-0.47	-1.56	0.22	-0.47	-1.93
British Columbia	0.57	0.47	-0.11	0.63	0.53	-0.11
Yukon	0.41	0.10	-0.52	0.54	0.19	-0.72
Northwest Territories	-1.03	-1.25	-1.88	-0.98	-1.23	-2.10
Nunavut	0.55	0.11	-0.60	0.49	-0.01	-0.97

Note: There are three scenarios for required nominal GDP growth: the base case, alternative scenario A and alternative scenario B. Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

F. Alternative Scenario 6: Provincial Trends in Average Hours Worked

For the baseline projections, we assumed that every province and territory will exhibit the national growth rates in average hours worked by age group observed over the 1976-2014 period. In alternative scenario 6, we use provincial growth rates in average hours worked by age group from 1976-2014 to project labour force growth rather than national growth rates by age group from 1976-2014. The provincial growth rates are shown in Table 27. The results of this sensitivity analysis are shown in Table 28.

Table 27: Average Actual Hours Worked, Compound Annual Growth Rates, Per Cent, Canada, 1976-2014

	Young Workers (15-24)	Prime-age Workers (25-54)	Older Workers (55+)
Canada	-0.56	-0.14	-0.25
Newfoundland and Labrador	-0.52	-0.09	-0.31
Prince Edward Island	-0.49	-0.21	-0.27
Nova Scotia	-0.49	-0.12	-0.22
New Brunswick	-0.46	-0.04	-0.22
Quebec	-0.83	-0.22	-0.40
Ontario	-0.55	-0.11	-0.17
Manitoba	-0.50	-0.15	-0.18
Saskatchewan	-0.41	-0.26	-0.42
Alberta	-0.33	-0.13	-0.26
British Columbia	-0.39	-0.13	-0.11

Source: CSLS calculations based on Statistics Canada data.

Table 28: Long-term Economic Growth Projections, with Provincial Trends in Average Hours Worked, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

Panel A: Growth in Hours Worked, Labour Productivity and Real GDP

	2014-2026			2026-2038		
	Hours Worked	**Labour Productivity**	**Real GDP**	**Hours Worked**	**Labour Productivity**	**Real GDP**
Canada	0.55	0.99	1.54	0.57	0.99	1.57
Newfoundland and Labrador	-1.08	1.66	0.56	-1.08	1.66	0.56
Prince Edward Island	0.57	1.01	1.59	0.51	1.01	1.52
Nova Scotia	-0.40	1.11	0.71	-0.37	1.11	0.74
New Brunswick	-0.31	1.16	0.85	-0.33	1.16	0.83
Quebec	0.10	0.96	1.06	0.14	0.96	1.10
Ontario	0.58	0.88	1.46	0.57	0.88	1.45
Manitoba	0.78	1.54	2.33	0.81	1.54	2.36
Saskatchewan	0.30	1.42	1.72	0.37	1.42	1.79
Alberta	1.54	0.80	2.35	1.49	0.80	2.31
British Columbia	0.79	1.40	2.20	0.80	1.40	2.21

Panel B: Growth in Real GDP, GDP Deflator and Nominal GDP (2 Per Cent GDP Deflator Growth)

	2014-2026			2026-2038		
	Real GDP	**GDP Deflator**	**Nominal GDP**	**Real GDP**	**GDP Deflator**	**Nominal GDP**
Canada	1.54	2.00	3.58	1.57	2.00	3.60
Newfoundland and Labrador	0.56	2.00	2.57	0.56	2.00	2.57
Prince Edward Island	1.59	2.00	3.62	1.52	2.00	3.55
Nova Scotia	0.71	2.00	2.73	0.74	2.00	2.76
New Brunswick	0.85	2.00	2.87	0.83	2.00	2.85
Quebec	1.06	2.00	3.08	1.10	2.00	3.12
Ontario	1.46	2.00	3.49	1.45	2.00	3.48
Manitoba	2.33	2.00	4.38	2.36	2.00	4.41
Saskatchewan	1.72	2.00	3.76	1.79	2.00	3.83
Alberta	2.35	2.00	4.39	2.31	2.00	4.35
British Columbia	2.20	2.00	4.24	2.21	2.00	4.26

Note: Labour productivity is defined as real GDP per hour worked.
Source: CSLS calculations based on Statistics Canada data.

Table 24 shows the differences between the projections for nominal GDP growth (from alternative scenario 6) and the rate of nominal GDP growth required for revenues to grow at the same pace as expenditures by province and territory for the 2014-2026 and 2026-2038 periods. Again, it is important to note that the required nominal GDP growth rates are based on the M1 scenario for population growth, which limits the comparability of alternative scenario 5 with the three scenarios for spending growth.

Table 29: Difference Between Projected and Required Nominal GDP Growth by Scenario for Public Spending Growth, Percentage Points, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026			2026-2038		
	Base Case	Scen. A	Scen. B	Base Case	Scen. A	Scen. B
Canada	0.62	0.33	-0.37	0.83	0.52	-0.34
Newfoundland and Labrador	1.00	0.58	-0.49	1.34	0.88	-0.52
Prince Edward Island	0.68	0.34	-0.95	0.83	0.47	-1.23
Nova Scotia	0.63	0.31	-1.34	0.93	0.59	-1.51
New Brunswick	0.76	0.39	-0.58	1.01	0.62	-0.64
Quebec	0.39	0.24	-0.31	0.66	0.51	-0.17
Ontario	0.58	0.26	-0.34	0.76	0.42	-0.31
Manitoba	1.30	0.88	0.13	1.45	1.00	0.07
Saskatchewan	0.97	0.46	-0.48	1.22	0.66	-0.57
Alberta	0.49	-0.14	-1.23	0.69	0.01	-1.46
British Columbia	1.11	1.01	0.44	1.31	1.21	0.56

Note: There are three scenarios for required nominal GDP growth: the base case, alternative scenario A and alternative scenario B. Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

G. Range of Projections for Nominal GDP Growth

Table 30 presents a range of projections for nominal GDP growth in Canada and the provinces and territories for the 2014-2026 and 2026-2038 periods based on a wide array of assumptions. In particular, the results of the various sensitivity analyses are presented alongside the baseline projections. Alternative scenario 1 uses historical GDP deflator growth rates by province and territory from the 2000-2014 period instead of 2.0 per cent growth. Alternative scenario 2 uses (slower) growth rates in average hours worked from the 2000-2014 period instead of the 1976-2014 period (which are used in the baseline projections). In 2000-2014, the historical labour productivity growth rates in individual provinces were shaped by particular developments that may or may not be repeated. Therefore, in alternative scenario 3, we assume that all provincial and territorial productivity growth rates *converge* to the national average (1.0 per cent per year). Alternative scenario 4 uses the high-growth scenario from Statistics Canada's population projections. Alternative scenario 5 uses the low-growth scenario from Statistics Canada's population projections. Alternative scenario 6 uses provincial growth rates in average hours worked by age group from 1976-2014, rather than national growth rates in average hours worked by age group from 1976-2014 (as in the baseline projections).

In some cases, such as Canada, Ontario and Quebec, the range of nominal GDP growth rates is quite small. In other cases, such as Newfoundland and Labrador, Saskatchewan and the Northwest Territories, it is very large. In particular, the coefficient of variation for the range of nominal GDP growth rates for the 2014-2026 period was highest for the Northwest Territories (38.2 per cent), followed by Newfoundland and Labrador (29.7 per cent), Saskatchewan (20.7 per cent), Nunavut (14.9 per cent), and Alberta (11.6 per cent). The coefficients of variation for the remaining provinces and territories and the national average were below 7.1 per cent.

Another interesting feature is that the coefficient of variation is larger for every jurisdiction in 2026-2038 than in 2014-2026. This reflects the fact that the variation between the baseline, alternative scenario 4 and alternative scenario 5 is much larger in 2026-2038 compared

to 2014-2026, indicating increased uncertainty with respect to population growth over longer time periods.

It is important to mention that the six alternative scenarios presented in Table 30 only change one assumption at a time relative to the baseline projections. Therefore, we could generate even wider ranges of nominal GDP growth by combining the various assumptions (*e.g.* labour productivity convergence *and* high population growth). However, even without combining these assumptions, the range of projections is already quite large. This highlights the uncertainty surrounding the projections for the future path of nominal GDP growth in Canada and the provinces and territories. Nevertheless, despite the wide ranges, projected nominal GDP growth rates are lower than the historical growth rates observed over the 2000-2014 period for almost every jurisdiction due to demographic change.[28] In addition, there are few differences between the projections for 2014-2026 and 2026-2038 (excluding the high- and low-growth scenarios for population growth), with differences being attributable to disparities in projected population growth between the two periods.

Table 31 shows the jurisdictions for which the rate of nominal GDP growth required to fund growth in public spending is greater than projected nominal GDP growth. The table breaks down the comparison of projected and required nominal GDP growth by six scenarios for projected nominal GDP growth and by three scenarios for required nominal GDP growth.

The Northwest Territories is projected to face the greatest challenge in maintaining fiscal balance over the projection period, with growth in revenues projected to fall short of growth in public spending for almost every economic scenario even in the base case where public spending only grows in line with overall inflation and the population. As previously mentioned, the poor outlook for the Northwest Territories results from its low projected labour productivity growth rate (-0.5 per cent).[29]

Under alternative scenario A, where health spending is allowed to grow at the historical inflation rate for health spending (which is much higher than the overall inflation rate), Alberta appears vulnerable as it is projected to face a revenue shortfall in several of the economic scenarios. Ontario also appears vulnerable in this public spending scenario, with a revenue shortfall in two of seven economic scenarios.

Alberta's projected shortfall stems from above-average growth in the deflator for health spending (3.5 per cent) and weak labour productivity growth (0.8 per cent). However, these factors were related, either directly or indirectly, to the oil boom that took place in Alberta the 2000s, and it is unlikely that these trends will be exhibited over much of the 2014-2038 period. Ontario appears challenged because of below-average labour productivity growth (0.9 per cent).

---

[28] The only exceptions are: Ontario (Scenario 3 and Scenario 4); Manitoba (Scenario 1 and Scenario 4); British Columbia (Scenario 4); and Quebec (Scenario 4, but only in 2026-2038).

[29] The Northwest Territories exhibited negative labour productivity growth in the 2000-2013 period, which was likely related to a boom in extractive industries. These industries often have weak or negative productivity growth, especially in periods characterized by strong demand, high commodity price, rapid investment in new capital, and the exploitation of increasingly marginal mineral deposits.

Under alternative scenario B, where health spending is allowed to grow at its average pace from the past 15 years (in nominal per capita terms), it is clear that, by and large, provincial/territorial governments will not be able to meet the test of balancing revenue growth with growth in public spending over the 2014-2038 period. In fact, under some economic scenarios, all provinces and territories will face revenue shortfalls. Only British Columbia and Manitoba have sufficient revenue growth under *some* of the economic scenarios.

The relatively rosy outlooks for British Columbia and Manitoba are related to above-average labour productivity growth (1.4 and 1.5 per cent, respectively) and below-average slowdowns in labour input growth. In addition, projected growth in nominal per capita health spending for British Columbia is well below average (3.6 per cent).

Table 30: Range of Projections for Nominal GDP Growth, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2000-2014	2014-2026								2014-2026							
		Base Case	Scen. 1	Scen. 2	Scen. 3	Scen. 4	Scen. 5	Scen. 6	C.V.	Base Case	Scen. 1	Scen. 2	Scen. 3	Scen. 4	Scen. 5	Scen. 6	C.V.
Canada	4.29	3.58	3.79	3.35	3.58	3.85	3.25	3.58	5.6	3.60	3.82	3.38	3.60	3.99	3.14	3.60	7.1
Newfoundland and Labrador	6.95	2.56	4.63	2.33	1.88	2.66	2.47	2.57	29.7	2.56	4.64	2.34	1.89	2.77	2.39	2.57	29.8
Prince Edward Island	4.13	3.66	3.92	3.44	3.65	3.89	3.36	3.62	5.3	3.59	3.85	3.37	3.58	3.94	3.14	3.55	7.0
Nova Scotia	3.37	2.70	2.64	2.47	2.58	2.84	2.57	2.73	4.2	2.73	2.67	2.51	2.61	2.96	2.49	2.76	5.6
New Brunswick	3.37	2.79	2.93	2.56	2.61	2.91	2.67	2.87	4.9	2.77	2.91	2.55	2.60	2.99	2.56	2.85	6.1
Quebec	3.54	3.20	3.10	2.97	3.23	3.40	2.96	3.08	4.6	3.25	3.15	3.02	3.28	3.58	2.88	3.12	6.4
Ontario	3.48	3.45	3.23	3.22	3.57	3.74	3.10	3.49	6.2	3.44	3.22	3.21	3.55	3.84	2.95	3.48	7.9
Manitoba	4.43	4.37	4.54	4.14	3.80	4.61	4.01	4.38	6.3	4.39	4.56	4.16	3.83	4.81	3.84	4.41	7.9
Saskatchewan	6.60	3.87	6.08	3.64	3.43	4.07	3.62	3.76	20.7	3.94	6.15	3.72	3.50	4.27	3.54	3.83	20.7
Alberta	6.64	4.37	5.77	4.14	4.57	4.63	4.06	4.39	11.6	4.32	5.72	4.10	4.52	4.69	3.88	4.35	12.2
British Columbia	4.25	4.18	3.95	3.95	3.76	4.60	3.70	4.24	7.1	4.19	3.96	3.96	3.77	4.68	3.58	4.26	8.2
Yukon	5.60	3.48	3.51	3.24	3.26	3.81	3.25	n.a.	6.0	3.57	3.60	3.34	3.35	3.79	3.01	n.a.	7.2
Northwest Territories	4.00	1.30	1.36	1.07	2.82	1.45	1.20	n.a.	38.2	1.20	1.26	0.98	2.71	1.44	0.90	n.a.	42.9
Nunavut	8.04	3.85	5.40	3.63	3.88	3.91	3.72	n.a.	14.9	3.67	5.22	3.45	3.70	4.05	3.50	n.a.	15.5

Note: "C.V." stands for coefficient of variation; it is simply the standard deviation of the six scenarios (including the base case) divided by the mean expressed as a percentage. "Scen." is short for alternative scenario. There are seven scenarios for projected nominal GDP growth: the baseline projections and six alternative scenarios. The different alternative scenarios for projected nominal GDP growth are described below:

1) Alternative scenario 1 uses historical GDP deflator growth rates by province and territory for 2000-2014.
2) Alternative scenario 2 uses the (typically lower) national growth rates in average hours worked by age group for 2000-2014.
3) Alternative scenario 3 uses the historical national labour productivity growth rate of 0.99 per cent per year for each province and territory.
4) Alternative scenario 4 uses the high population growth scenario from Statistics Canada's official population projections.
5) Alternative scenario 5 uses the low population growth scenario from Statistics Canada's official population projections.
6) Alternative scenario 6 uses the provincial growth rates in average hours worked by age group for 1976-2014.

Source: CSLS calculations based on Statistics Canada data.

Table 31: Jurisdictions where Revenue Growth is Likely to Fall Short of Public Spending Growth, by Fiscal and Economic Scenario, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

Scenario for Nominal GDP Growth	2014-2026			2026-2038		
	Scenario for Public Spending Growth			Scenario for Public Spending Growth		
	Base Case	Alternative Scenario A	Alternative Scenario B	Base Case	Alternative Scenario A	Alternative Scenario B
Baseline Projections	NT	AB, NT	All jurisdictions except for MB and BC	NT	AB, NT	All jurisdictions except for MB and BC
Alternative Scenario 1	NT	NT	PE, NS, NB, QC, ON, YT, NT	NT	NT	PE, NS, NB, QC, ON, AB, YT, NT
Alternative Scenario 2	NT	ON, AB, NT	All jurisdictions except for BC	NT	AB, NT, NU	All jurisdictions except for BC
Alternative Scenario 3	None	NL	All jurisdictions	None	None	All jurisdictions except for BC
Alternative Scenario 4	NT	NT	NL, PE, NS, NB, ON, SK, AB, NT, NU	NT	NT	NL, PE, NS, NB, SK, AB, NT, NU
Alternative Scenario 5	NT	ON, AB, NT	All jurisdictions	NT	ON, AB, NT, NU	All jurisdictions
Alternative Scenario 6[a]	None	AB	All provinces except for MB and BC	None	None	All provinces except for MB and BC

Note: This table shows the jurisdictions for which required nominal GDP growth is expected to be greater than projected nominal GDP growth. There are seven scenarios for projected nominal GDP growth: the baseline projections and six alternative scenarios. See Table 30 for a list of the different alternative scenarios for projected nominal GDP growth. There are also three scenarios for required nominal GDP growth: the base case, alternative scenario A, and alternative scenario B. The base case assumes that public spending will be constant in real per capita terms, with growth in nominal per capita expenditure at the assumed inflation rate (2.0 per cent). Alternative scenario A assumes that public spending – divided into health and non-health spending – will be constant in real per capita terms, with growth in nominal per capita non-health spending at the assumed inflation rate (2.0 per cent) and nominal per capita health spending at the historical growth rates in the deflator for health spending in 2000-2014 (which range from 2.2 to 3.6 per cent). Alternative scenario B assumes that non-health spending will be constant in real per capita terms, with growth in nominal per capita non-health spending at the assumed inflation rate (2.0 per cent). However, it assumes that health will be positive in real per capita terms, with growth in nominal per capita health spending at the historical growth rates in nominal per capita health spending in 2000-2014 (which range from 3.6 to 6.1 per cent).
Source: CSLS calculations based on Statistics Canada and Canadian Institute of Health Information data.

References

Alexander, C., D. Burleton, and J. Bendiner (2015). "Provincial Economic Forecast Update." TD Economics.

Bartlett, R., J. Bendiner, and A. Kolaj (2015). "From a Longer-Term Growth Perspective, West is Still Best." TD Economics.

Beckman, K., D. Fields, and M. Stewart (2014). *A Difficult Road Ahead: Canada's Economic and Fiscal Prospects*. Ottawa, The Conference Board of Canada.

Cameron, S., H. Lao, and T. Shaw (2014). *Fiscal Sustainability Report 2014*. Office of the Parliamentary Budget Officer, Ottawa.

Clavet, N.-J., J.-Y. Duclos, B. Fortin, S. Marchand, and P. C. Michaud (2013), "Les dépenses en santé du Gouvernement du Québec, 2013-2020: projections et déterminants." Cahier Scientifique 2013s-45, Centre Interuniversitaire De Recherche En Analyse Des Organisations, Montréal.

Commission on the Reform of Ontario's Public Services (2012). "Public Services for Ontarians: A Path to Sustainability and Excellence."

Dodge, D. A., and R. Dion (2011). *Chronic healthcare spending disease: A macro diagnosis and prognosis.* C.D. Howe Institute, Commentary No. 327.

Drummond, D., and D. Burleton (2010). "Charting a path to sustainable health care in Ontario: 10 proposals to restrain cost growth without compromising quality of care." TD Economics Special Reports.

Drummond, D. (2011). "Therapy or surgery? A prescription for Canada's health system." Benefactors Lecture presented to the C.D. Howe Institute.

Dungan, P. and S. Murphy (2013). "Policy and Economic Analysis Program, *Long Term Outlook for the Canadian Economy: National Projection through 2040*," November 2013.

Godbout, L., P. Fortin, M. Arseneau, and S. St-Cerny (2007). *Oser Choisir Maintenant*. Presses De L'université Laval, Québec.

Godbout, L., S. St-Cerny, M. Arseneau, N.H. Dao, and P. Fortin (2014). "La soutenabilité budgétaire des finances publiques du Gouvernement du Québec." Document De Travail 2014/01, Chaire De Recherches En Fiscalité Et En Finances Publiques, Université De Sherbrooke.

Ontario Ministry of Finance (2014). "Ontario's Long-Term Report on the Economy."

Smith, J. (2004). "Assessing Aggregate Labour Productivity Trends in Canada and the United States: Total Economy versus Business Sector Perspectives," *International Productivity Monitor*, 8.

Appendix

Appendix Table 1: Determinants of Growth in Total Hours Worked, Compound Annual Growth Rates, Per Cent, Canada and the Provinces, 2000-2014

Panel A: Growth in the Working Age Population, Participation Rates and Employment

	Working Age Population Growth				Growth in Employment Rates				Employment Growth			
	Total	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**
Canada	1.33	0.68	0.44	3.28	0.02	-0.09	0.12	2.66	1.35	0.60	0.56	6.02
Newfoundland and Labrador	0.24	-1.98	-0.93	3.32	1.07	2.53	1.21	4.74	1.31	0.51	0.27	8.21
Prince Edward Island	0.87	-0.11	-0.29	3.18	0.31	-0.08	0.44	3.78	1.18	-0.20	0.16	7.08
Nova Scotia	0.41	-0.45	-0.83	2.75	0.19	0.10	0.41	3.69	0.60	-0.34	-0.42	6.55
New Brunswick	0.28	-1.09	-0.99	2.95	0.19	0.14	0.47	3.70	0.47	-0.95	-0.52	6.76
Quebec	1.04	0.07	0.03	3.22	0.23	0.76	0.37	3.03	1.27	0.83	0.40	6.35
Ontario	1.45	1.21	0.52	3.30	-0.24	-0.78	-0.11	2.52	1.21	0.42	0.41	5.90
Manitoba	0.95	0.69	0.27	2.25	-0.04	-0.50	-0.04	2.52	0.91	0.18	0.24	4.83
Saskatchewan	0.95	-0.07	0.67	1.98	0.40	0.36	0.11	2.57	1.35	0.29	0.78	4.60
Alberta	2.55	1.36	2.15	4.32	0.07	-0.25	-0.01	2.49	2.62	1.10	2.14	6.92
British Columbia	1.27	0.70	0.20	3.40	-0.08	0.22	0.15	1.94	1.19	0.93	0.35	5.42

Panel B: Growth in the Employment, Average Hours Worked and Total Hours Worked

	Employment Growth				Growth in Average Hours Worked				Growth in Total Hours Worked			
	Total	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**
Canada	1.35	0.60	0.56	6.02	-0.31	-0.53	-0.40	-0.46	1.03	0.06	0.16	5.53
Newfoundland and Labrador	1.31	0.51	0.27	8.21	-0.43	0.04	-0.07	-0.61	0.87	0.55	0.20	7.55
Prince Edward Island	1.18	-0.20	0.16	7.08	-0.37	-0.62	-0.41	0.14	0.81	-0.82	-0.25	7.23
Nova Scotia	0.60	-0.34	-0.42	6.55	-0.31	-0.32	-0.32	-0.42	0.29	-0.67	-0.74	6.10
New Brunswick	0.47	-0.95	-0.52	6.76	-0.49	-0.67	-0.41	-0.39	-0.03	-1.61	-0.93	6.34
Quebec	1.27	0.83	0.40	6.35	-0.64	-1.06	-0.44	-0.81	0.62	-0.24	-0.04	5.49
Ontario	1.21	0.42	0.41	5.90	-0.42	-0.54	-0.46	-0.41	0.78	-0.12	-0.06	5.47
Manitoba	0.91	0.18	0.24	4.83	-0.28	-0.44	-0.39	-0.34	0.62	-0.25	-0.15	4.47
Saskatchewan	1.35	0.29	0.78	4.60	-0.44	-0.14	-0.39	-0.30	0.91	0.15	0.39	4.29
Alberta	2.62	1.10	2.14	6.92	-0.23	-0.26	-0.26	-0.29	2.39	0.84	1.88	6.61
British Columbia	1.19	0.93	0.35	5.42	-0.16	-0.14	-0.41	-0.36	1.02	0.79	-0.05	5.03

Source: CSLS calculations based on Statistics Canada data.

Appendix Table 2: Assumptions for the Baseline Projection, Compound Annual Growth Rates, Per Cent, Canada and the Provinces, 2014-2026

Panel A: Growth in the Working Age Population, Participation Rates and the Labour Force

	Working Age Population Growth				Growth in Participation Rates				Labour Force Growth			
	Total	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**
Canada	0.92	-0.23	0.27	2.22	-0.16	-0.02	0.00	0.63	0.76	-0.25	0.27	2.87
Newfoundland and Labrador	-0.31	-1.58	-1.91	1.67	-0.52	-0.02	0.00	0.63	-0.83	-1.61	-1.91	2.32
Prince Edward Island	0.98	-0.18	0.09	2.35	-0.15	-0.02	0.00	0.63	0.82	-0.20	0.09	3.00
Nova Scotia	0.13	-1.43	-0.94	1.72	-0.33	-0.02	0.00	0.63	-0.20	-1.46	-0.94	2.36
New Brunswick	0.17	-1.17	-0.97	1.76	-0.32	-0.02	0.00	0.63	-0.15	-1.19	-0.97	2.40
Quebec	0.61	-0.55	0.00	1.76	-0.18	-0.02	0.00	0.63	0.43	-0.57	0.00	2.40
Ontario	0.91	-0.46	0.20	2.41	-0.17	-0.02	0.00	0.63	0.74	-0.48	0.20	3.05
Manitoba	1.04	0.17	0.65	1.98	-0.06	-0.02	0.00	0.63	0.98	0.14	0.65	2.62
Saskatchewan	0.67	-0.06	0.16	1.69	-0.04	-0.02	0.00	0.63	0.63	-0.08	0.16	2.33
Alberta	1.80	0.98	1.27	3.17	-0.06	-0.02	0.00	0.63	1.74	0.96	1.27	3.82
British Columbia	1.11	0.15	0.45	2.28	-0.16	-0.02	0.00	0.63	0.95	0.13	0.45	2.93

Panel B: Growth in the Labour Force, Average Hours Worked and Total Hours Worked

	Labour Force Growth				Growth in Average Hours Worked				Growth in Total Hours Worked			
	Total	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**
Canada	0.76	-0.25	0.27	2.87	-0.21	-0.56	-0.14	-0.25	0.55	-0.80	0.12	2.62
Newfoundland and Labrador	-0.83	-1.61	-1.91	2.32	-0.27	-0.56	-0.14	-0.25	-1.09	-2.15	-2.05	2.07
Prince Edward Island	0.82	-0.20	0.09	3.00	-0.21	-0.56	-0.14	-0.25	0.62	-0.75	-0.05	2.74
Nova Scotia	-0.20	-1.46	-0.94	2.36	-0.22	-0.56	-0.14	-0.25	-0.42	-2.00	-1.08	2.11
New Brunswick	-0.15	-1.19	-0.97	2.40	-0.24	-0.56	-0.14	-0.25	-0.39	-1.74	-1.12	2.15
Quebec	0.43	-0.57	0.00	2.40	-0.21	-0.56	-0.14	-0.25	0.22	-1.12	-0.14	2.15
Ontario	0.74	-0.48	0.20	3.05	-0.20	-0.56	-0.14	-0.25	0.54	-1.04	0.06	2.80
Manitoba	0.98	0.14	0.65	2.62	-0.21	-0.56	-0.14	-0.25	0.77	-0.41	0.51	2.37
Saskatchewan	0.63	-0.08	0.16	2.33	-0.22	-0.56	-0.14	-0.25	0.41	-0.64	0.02	2.08
Alberta	1.74	0.96	1.27	3.82	-0.22	-0.56	-0.14	-0.25	1.51	0.40	1.12	3.57
British Columbia	0.95	0.13	0.45	2.93	-0.22	-0.56	-0.14	-0.25	0.73	-0.43	0.31	2.68

Source: CSLS calculations based on Statistics Canada data.

Appendix Table 3: Assumptions for the Baseline Projection, Compound Annual Growth Rates, Per Cent, Canada and the Provinces, 2026-2038

Panel A: Growth in the Working Age Population, Participation Rates and the Labour Force

	Working Age Population Growth				Growth in Participation Rates				Labour Force Growth			
	Total	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**
Canada	0.83	1.01	0.45	1.21	-0.02	-0.02	0.00	0.37	0.81	0.99	0.45	1.59
Newfoundland and Labrador	-0.65	-1.04	-1.52	0.07	-0.18	-0.02	0.00	0.37	-0.83	-1.06	-1.52	0.44
Prince Edward Island	0.77	0.60	0.37	1.18	0.01	-0.02	0.00	0.37	0.78	0.58	0.37	1.56
Nova Scotia	-0.08	0.00	-0.66	0.39	-0.07	-0.02	0.00	0.37	-0.15	-0.02	-0.66	0.76
New Brunswick	-0.08	-0.17	-0.69	0.44	-0.08	-0.02	0.00	0.37	-0.16	-0.19	-0.69	0.81
Quebec	0.55	1.01	0.11	0.89	-0.04	-0.02	0.00	0.37	0.51	0.99	0.11	1.26
Ontario	0.77	0.71	0.41	1.18	-0.01	-0.02	0.00	0.37	0.75	0.69	0.41	1.56
Manitoba	1.03	1.18	0.72	1.34	0.00	-0.02	0.00	0.37	1.03	1.16	0.72	1.72
Saskatchewan	0.75	1.19	0.24	1.17	-0.02	-0.02	0.00	0.37	0.73	1.17	0.24	1.55
Alberta	1.75	2.12	1.25	2.33	-0.03	-0.02	0.00	0.37	1.72	2.10	1.25	2.71
British Columbia	0.98	1.03	0.64	1.34	-0.02	-0.02	0.00	0.37	0.97	1.01	0.64	1.71

Panel B: Growth in the Labour Force, Average Hours Worked and Total Hours Worked

	Labour Force Growth				Growth in Average Hours Worked				Growth in Total Hours Worked			
	Total	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**	**Total**	**15-24**	**25-54**	**55+**
Canada	0.81	0.99	0.45	1.59	-0.24	-0.56	-0.14	-0.25	0.57	0.43	0.30	1.34
Newfoundland and Labrador	-0.83	-1.06	-1.52	0.44	-0.25	-0.56	-0.14	-0.25	-1.09	-1.61	-1.66	0.20
Prince Edward Island	0.78	0.58	0.37	1.56	-0.22	-0.56	-0.14	-0.25	0.55	0.02	0.23	1.31
Nova Scotia	-0.15	-0.02	-0.66	0.76	-0.25	-0.56	-0.14	-0.25	-0.39	-0.58	-0.80	0.51
New Brunswick	-0.16	-0.19	-0.69	0.81	-0.25	-0.56	-0.14	-0.25	-0.40	-0.75	-0.83	0.56
Quebec	0.51	0.99	0.11	1.26	-0.25	-0.56	-0.14	-0.25	0.26	0.42	-0.04	1.01
Ontario	0.75	0.69	0.41	1.56	-0.23	-0.56	-0.14	-0.25	0.53	0.13	0.27	1.31
Manitoba	1.03	1.16	0.72	1.72	-0.24	-0.56	-0.14	-0.25	0.79	0.60	0.58	1.47
Saskatchewan	0.73	1.17	0.24	1.55	-0.25	-0.56	-0.14	-0.25	0.47	0.61	0.10	1.30
Alberta	1.72	2.10	1.25	2.71	-0.25	-0.56	-0.14	-0.25	1.47	1.53	1.11	2.46
British Columbia	0.97	1.01	0.64	1.71	-0.23	-0.56	-0.14	-0.25	0.73	0.45	0.50	1.46

Source: CSLS calculations based on Statistics Canada data.

Appendix Table 4: Determinants of Growth in Total Hours Worked, Compound Annual Growth Rates, Per Cent, Canada and the Territories, 2004-2014

Panel A: Growth in the Working Age Population, Participation Rates and Employment

	Working Age Population Growth			Growth in Employment Rates			Employment Growth		
	Total	**15-24**	**25+**	**Total**	**15-24**	**25+**	**Total**	**15-24**	**25+**
Canada	1.32	0.53	1.48	-0.19	-0.41	-0.17	1.13	0.12	1.30
Yukon	1.83	0.23	2.17	-0.06	0.18	-0.04	1.78	0.41	2.13
Northwest Territories	0.44	-0.46	0.76	-0.44	-1.47	-0.39	0.00	-1.92	0.37
Nunavut	5.26	4.67	5.47	-0.20	-2.03	0.04	5.07	2.54	5.51

Panel B: Growth in the Employment, Average Hours Worked and Total Hours Worked

	Employment Growth			Growth in Average Hours Worked			Growth in Total Hours Worked		
	Total	**15-24**	**25+**	**Total**	**15-24**	**25+**	**Total**	**15-24**	**25+**
Canada	1.13	0.12	1.30	-0.30	-0.45	-0.30	0.83	-0.32	0.99
Yukon	1.78	0.41	2.13	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Northwest Territories	0.00	-1.92	0.37	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Nunavut	5.07	2.54	5.51	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: CSLS calculations based on Statistics Canada data.

Appendix Table 5: Assumptions for the Baseline Projection, Compound Annual Growth Rates, Per Cent, Canada and the Territories, 2014-2026

Panel A: Growth in the Working Age Population, Participation Rates and the Labour Force

	Working Age Population Growth			Growth in Participation Rates			Labour Force Growth		
	Total	**15-24**	**25+**	**Total**	**15-24**	**25+**	**Total**	**15-24**	**25+**
Canada	0.92	-0.23	1.12	-0.16	-0.02	-0.18	0.77	-0.25	0.93
Yukon	0.60	-0.36	0.76	-0.14	-0.02	-0.18	0.46	-0.38	0.58
Northwest Territories	0.12	-0.92	0.35	-0.10	-0.02	-0.18	0.02	-0.94	0.17
Nunavut	1.17	0.62	1.35	-0.09	-0.02	-0.18	1.07	0.60	1.17

Panel B: Growth in the Labour Force, Average Hours Worked and Total Hours Worked

	Labour Force Growth			Growth in Average Hours Worked			Growth in Total Hours Worked		
	Total	**15-24**	**25+**	**Total**	**15-24**	**25+**	**Total**	**15-24**	**25+**
Canada	0.77	-0.25	0.93	-0.21	-0.56	-0.21	0.55	-0.80	0.72
Yukon	0.46	-0.38	0.58	-0.22	-0.56	-0.21	0.24	-0.94	0.37
Northwest Territories	0.02	-0.94	0.17	-0.21	-0.56	-0.21	-0.19	-1.49	-0.04
Nunavut	1.07	0.60	1.17	-0.23	-0.56	-0.21	0.84	0.04	0.96

Source: CSLS calculations based on Statistics Canada data.

Appendix Table 6: Assumptions for the Baseline Projection, Compound Annual Growth Rates, Per Cent, Canada and the Territories, 2026-2038

Panel A: Growth in the Working Age Population, Participation Rates and the Labour Force

	Working Age Population Growth			Growth in Participation Rates			Labour Force Growth		
	Total	**15-24**	**25+**	**Total**	**15-24**	**25+**	**Total**	**15-24**	**25+**
Canada	0.84	1.01	0.81	-0.02	-0.02	-0.02	0.82	0.99	0.79
Yukon	0.61	1.05	0.53	-0.03	-0.02	-0.02	0.57	1.03	0.51
Northwest Territories	0.00	0.41	-0.09	-0.04	-0.02	-0.02	-0.04	0.39	-0.11
Nunavut	0.97	1.22	0.89	-0.05	-0.02	-0.02	0.92	1.20	0.87

Panel B: Growth in the Labour Force, Average Hours Worked and Total Hours Worked

	Labour Force Growth			Growth in Average Hours Worked			Growth in Total Hours Worked		
	Total	**15-24**	**25+**	**Total**	**15-24**	**25+**	**Total**	**15-24**	**25+**
Canada	0.82	0.99	0.79	-0.24	-0.56	-0.19	0.58	0.43	0.59
Yukon	0.57	1.03	0.51	-0.24	-0.56	-0.19	0.33	0.46	0.32
Northwest Territories	-0.04	0.39	-0.11	-0.25	-0.56	-0.19	-0.29	-0.17	-0.30
Nunavut	0.92	1.20	0.87	-0.25	-0.56	-0.19	0.67	0.64	0.67

Source: CSLS calculations based on Statistics Canada data.

Appendix Table 7: Comparing Growth Rates in Labour Productivity and Total Hours Worked, using Different Sources for Total Hours Worked, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2000-2013

	Labour Force Survey			Canadian Productivity Accounts		
	Hours Worked	Real GDP	Labour Productivity	Hours Worked	Real GDP	Labour Productivity
Canada	1.02	1.99	0.97	1.08	1.99	0.90
Newfoundland and Labrador	1.38	2.97	1.57	1.08	2.97	1.87
Prince Edward Island	0.80	1.86	1.06	0.79	1.86	1.07
Nova Scotia	0.30	1.39	1.08	0.36	1.39	1.02
New Brunswick	0.13	1.23	1.10	0.12	1.23	1.11
Quebec	0.83	1.60	0.77	0.78	1.60	0.81
Ontario	0.81	1.62	0.80	0.89	1.62	0.72
Manitoba	0.57	2.25	1.67	0.70	2.25	1.54
Saskatchewan	1.18	2.42	1.23	1.08	2.42	1.33
Alberta	2.48	3.12	0.62	2.52	3.12	0.58
British Columbia	0.93	2.43	1.49	1.20	2.43	1.22
Yukon	n.a.	n.a.	n.a.	2.27	3.49	1.20
Northwest Territories	n.a.	n.a.	n.a.	2.41	1.90	-0.50
Nunavut	n.a.	n.a.	n.a.	3.36	4.36	0.97

Note: Labour productivity is defined as real GDP per hour worked. We use the same real GDP growth estimates to calculate both sets of labour productivity growth estimates.
Source: CSLS calculations based on Statistics Canada data.

Appendix Table 8: Source of Total Population Growth, Medium Growth Scenario, Compound Annual Growth Rates, Per Cent, Canada and the Provinces and Territories, 2014-2026 and 2026-2038

	2014-2026				2026-2038			
	Total Population Growth	**Natural Increase**	**Net International Migration**	**Net Interprovincial Migration**	**Total Population Growth**	**Natural Increase**	**Net International Migration**	**Net Interprovincial Migration**
Canada	0.94	0.34	0.60	0.00	0.76	0.16	0.59	0.00
Newfoundland and Labrador	-0.42	-0.18	0.08	-0.32	-0.77	-0.59	0.06	-0.23
Prince Edward Island	0.94	0.11	0.77	0.06	0.72	-0.11	0.77	0.06
Nova Scotia	0.09	-0.08	0.19	-0.02	-0.17	-0.36	0.18	0.01
New Brunswick	0.11	-0.05	0.20	-0.04	-0.16	-0.33	0.19	-0.02
Quebec	0.68	0.25	0.54	-0.12	0.45	0.04	0.53	-0.12
Ontario	0.89	0.31	0.62	-0.04	0.71	0.14	0.61	-0.04
Manitoba	1.06	0.51	0.98	-0.43	0.94	0.41	0.97	-0.45
Saskatchewan	0.77	0.54	0.66	-0.42	0.60	0.39	0.65	-0.45
Alberta	1.87	0.80	0.73	0.34	1.63	0.61	0.72	0.30
British Columbia	1.11	0.21	0.61	0.29	0.93	0.06	0.59	0.28
Yukon	0.94	0.68	0.77	-0.51	0.47	0.47	0.70	-0.70
Northwest Territories	0.10	1.14	0.00	-1.05	-0.29	0.86	0.00	-1.15
Nunavut	1.09	2.00	0.00	-0.92	1.00	1.98	0.00	-0.98

Source: CSLS calculations based on Statistics Canada data.

Appendix Table 9: Projected Budgetary Balance and Net Debt, Federal and Provincial Governments, 2014-2015

	Budgetary Balance		Net Debt	
	Millions of Dollars	**Share of GDP (Per Cent)**	**Millions of Dollars**	**Share of GDP (Per Cent)**
General Government	-15,849	-0.8	1,185,285	60.0
Federal	-2,000	-0.1	616,000	31.2
Newfoundland and Labrador	-924	-2.6	10,260	29.2
Prince Edward Island	-35	-0.6	2,151	36.4
Nova Scotia	-102	-0.3	14,961	36.9
New Brunswick	-255	-0.8	12,550	38.6
Quebec	-2,350	-0.6	190,402	50.7
Ontario	-10,900	-1.5	284,100	39.4
Manitoba	-451	-0.7	18,775	29.5
Saskatchewan	41	0.0	5,105	6.2
Alberta	248	0.1	-8,803	-2.6
British Columbia	879	0.4	39,784	17.0
Total: provincial governments	-13,849	-0.7	569,285	28.8

Source: CSLS calculations based on RBC data. Retrieved from: http://www.rbc.com/economics/economic-reports/pdf/provincial-forecasts/prov_fiscal.pdf.