Department of Finance Canada / Ministère des Finances Canada

2016

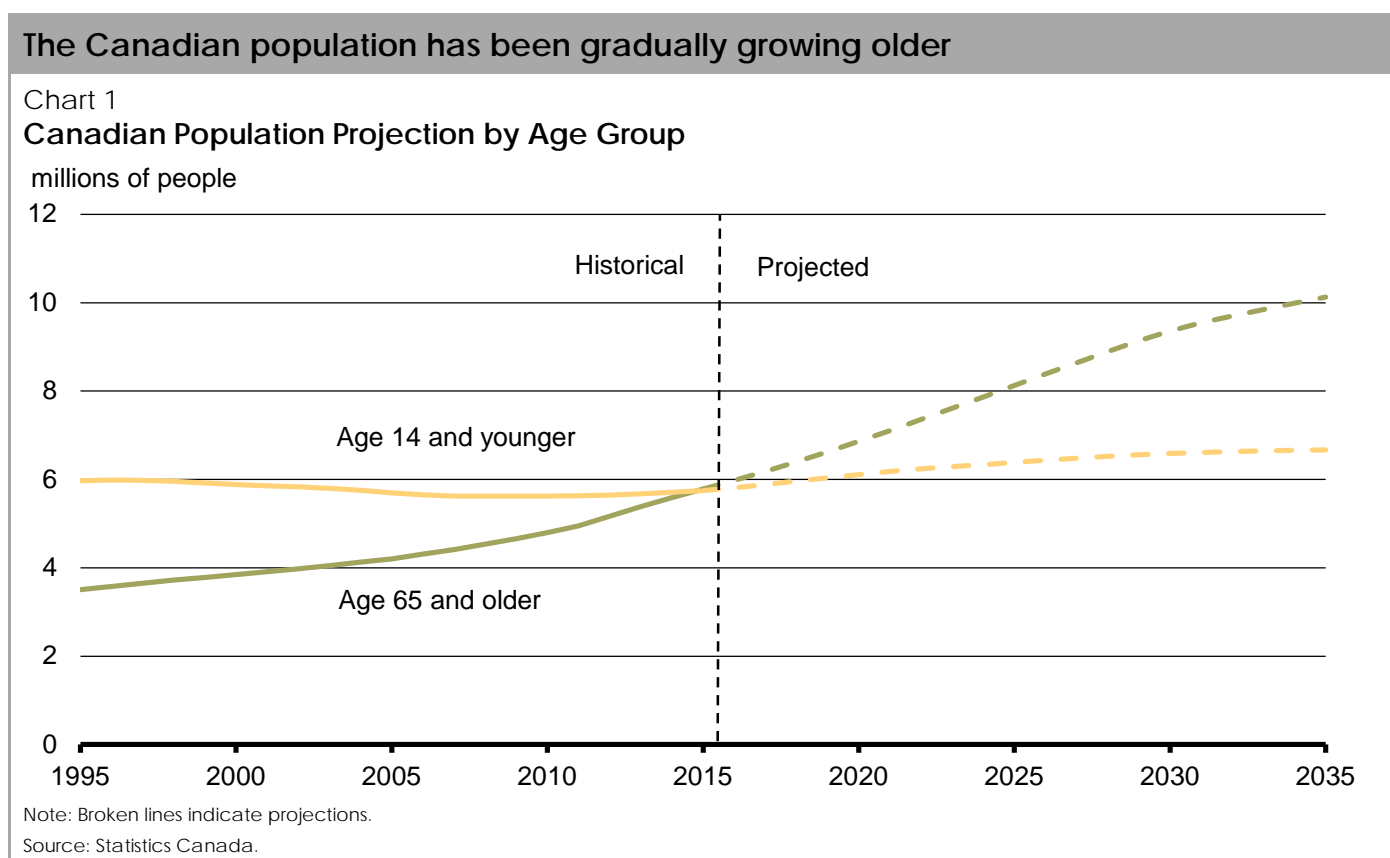# Update of Long-Term Economic and Fiscal Projections

Canada

Introduction

This document provides updated long-term economic and fiscal projections to 2055–56, using the medium-term forecast presented in the *2016 Fall Economic Statement* as the starting point.

As with any projections that extend over several decades, those presented in this document are subject to a fair degree of uncertainty. Rather than being viewed as a forecast of the future, these projections should be taken as scenarios that could occur based on current trends and policies and a reasonable set of demographic, economic and fiscal assumptions. They are intended to provide a broad analysis of the Government's fiscal position, to allow the Government to respond more effectively to upcoming challenges and protect the long-term sustainability of public finances.

A technical description of the methodology and key assumptions underlying this analysis is provided at the end of this document.

Canada's Demographic Transition

Canadians are living longer than ever and have one of the highest life expectancies in the world. Combined with falling fertility rates, these positive developments in longevity have resulted in the Canadian population gradually growing older. For the first time in Canada's history, there are now more seniors age 65 and over than there are children under the age of 15 (Chart 1).

The Canadian population has been gradually growing older

Chart 1
Canadian Population Projection by Age Group

millions of people

Historical | Projected

Age 14 and younger

Age 65 and older

1995 2000 2005 2010 2015 2020 2025 2030 2035

Note: Broken lines indicate projections.
Source: Statistics Canada.

Labour Market Impacts

With the oldest members of the large baby boom generation now reaching retirement age, Canada has passed a demographic tipping point. As this large generation retires from the labour market and is replaced by relatively smaller generations of new workers, the ratio of Canada's workers to our elderly population is expected to decrease dramatically over the coming decades.

Indeed, the number of working-age Canadians (aged 15 to 64) for every senior (aged 65 and over) is expected to fall from close to 5 over the past decade to 2.5 in less than 20 years (Chart 2), one of the largest projected decreases among Organisation for Economic Co-operation and Development (OECD) countries.

Population aging will also result in an increase in the share of older workers in the labour force. Because older workers participate less in the labour market than younger workers, an aging population is expected to lead to a reduction in the overall rate of labour force participation.[1] In fact, the impact of the shift toward an older population is already being felt, as the overall participation rate has now likely passed its peak.

Population aging will dramatically reduce the number of working-age Canadians for every senior and labour force participation
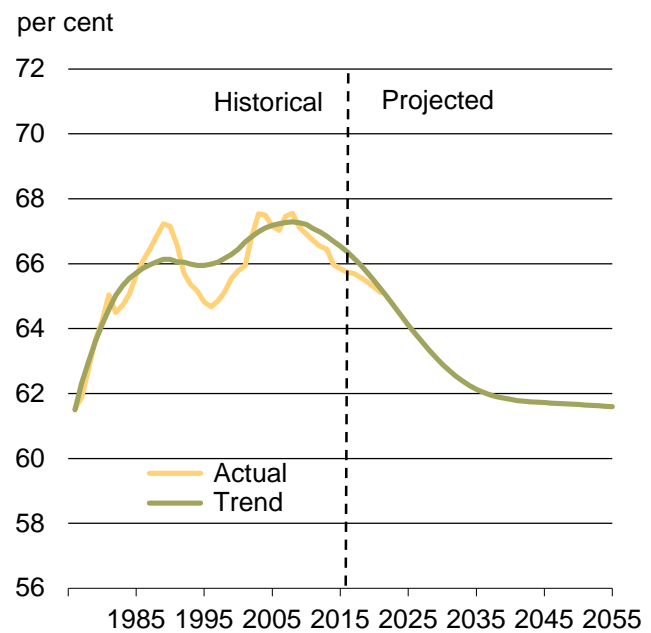
Chart 2

Ratio of Working-Age (15 to 64) Population to Population Aged 65+
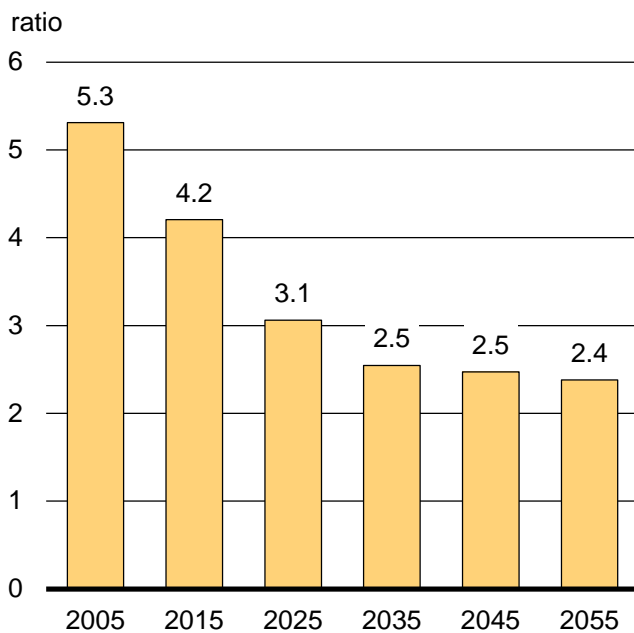
Sources: Statistics Canada; Department of Finance Canada calculations.

Labour Force Participation Rate

Sources: Statistics Canada; Department of Finance Canada calculations.

---

[1] The labour force includes non-institutionalized individuals aged 15 and over who are either working or actively seeking a job. Labour force participation rates are low when individuals are young (ages 15 to 24), reach peak levels between the ages of 25 and 54 and begin to decline starting at age 55. While participation rates of older individuals are expected to continue to increase, they are expected to remain well below rates seen among younger age groups.
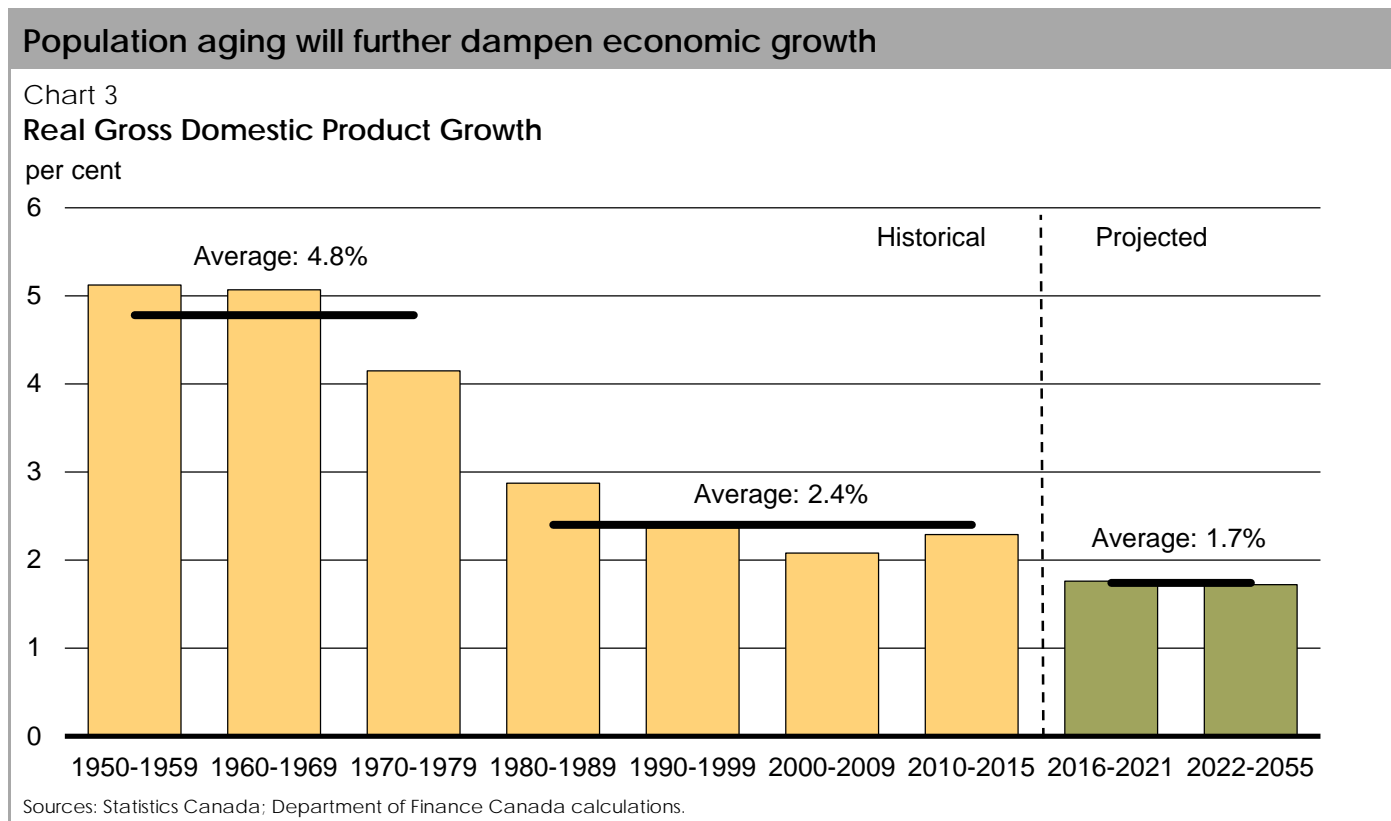
Economic Growth Impacts

Starting in the 1960s, the baby boom generation boosted the growth potential of the Canadian economy, as the first wave of that generation began to enter the labour market. However, as baby boomers move into retirement in increasing numbers, the opposite effect is expected to take hold.

Economic growth stems from growth in either labour supply or labour productivity (real output per hour worked). Reduced labour force participation due to population aging has already started and is expected to continue to reduce growth in labour supply—that is, the total number of hours worked by Canadians.

In this context, under baseline assumptions for labour force participation and productivity, the increase in the pace of population aging will have a negative impact on economic growth over the coming decades (Chart 3).

The age-related deceleration in economic growth in Canada will take place amidst other powerful, slow-moving global forces. As in Canada, the world population is aging and productivity growth has slowed across OECD countries. These structural forces are paving the way to slower global growth for the next number of years.

Population aging will further dampen economic growth

Chart 3
Real Gross Domestic Product Growth

per cent

Historical | Projected

Average: 4.8%

Average: 2.4%

Average: 1.7%

| | 1950-1959 | 1960-1969 | 1970-1979 | 1980-1989 | 1990-1999 | 2000-2009 | 2010-2015 | 2016-2021 | 2022-2055 |

Sources: Statistics Canada; Department of Finance Canada calculations.

Public Finance Impacts

With inflation expected to remain around 2 per cent per year, this negative impact on economic growth will translate into lower growth in nominal gross domestic product (GDP), the broadest single measure of the tax base.

Slower nominal GDP growth will thus reduce the growth rate of government revenues, thereby limiting the capacity of governments to continue to maintain the growth rates of public expenditure at levels as high as in the past. At the same time, population aging is also expected to put upward pressure on public expenditure, notably for age-related programs such as elderly benefits.

The medium-term fiscal forecast presented in the *2016 Fall Economic Statement* provides the starting point for the long-term fiscal projection. This medium-term fiscal forecast, which is based on the average of the September private sector economic outlook survey, shows a gradual reduction in the deficit following its 2017–18 peak as well as a slightly lower federal debt-to-GDP ratio by the end of the forecast horizon (Table 1).

Table 1
2016 Fall Economic Statement Budgetary Balance and Debt

		Projection					
	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022
Budgetary balance (billions of dollars)	-1.0	-25.1	-27.8	-25.9	-19.3	-16.8	-14.6
Federal debt (per cent of GDP)	31.1	31.8	31.8	31.9	31.5	31.0	30.4

Starting from this medium-term forecast, and assuming key current policy parameters remain the same, the federal debt-to-GDP ratio is projected to remain slightly below its current levels until the early 2030s when it is expected to start trending downward as population aging pressures start to ease (Chart 4).[2]

However, there are both upside and downside alternative scenarios around the baseline projection. For example, a combination of lower-than-expected productivity growth (following the growth trend of the last decade) and higher-than-expected program spending growth (equal to a quarter of a percentage point more per year) would be sufficient to put at risk the fiscal sustainability of the federal government. On the flip side, the combination of higher-than-expected productivity growth (catching up to the U.S. productivity growth trend) and lower-than-expected program spending growth (equal to a quarter of a percentage point less per year) would lead to budgetary surpluses much sooner and more rapid debt-to-GDP ratio reductions. In this context, it is important for the Government to manage its finances prudently and invest in the economy in order to preserve Canada's sound fiscal situation and respond to the impacts of the demographic transition.

A responsible approach to fiscal management will help ensure the federal debt-to-GDP ratio remains low

Chart 4
Federal Debt-to-GDP Ratio

Note: Low productivity assumes that productivity growth follows the growth trend of the last decade (from 2006 to 2015) of 0.8 per cent per year instead of 1.2 per cent under the baseline. Higher spending assumes that program expenses grow faster than their baseline growth by 0.25 percentage points per year. High productivity assumes that productivity growth follows the growth trend over the 2000 to 2015 period of the G7 best performer, the United States, of 1.6 per cent per year instead of 1.2 per cent under the baseline. Lower spending assumes that program expenses grow at a slower pace than their baseline growth by 0.25 percentage points per year.

Sources: Statistics Canada; Department of Finance Canada calculations.

---

2   Of note, the proposed enhancement of the Canada Pension Plan and associated tax changes are not expected to have a large impact on federal public finances over the long term, increasing the federal debt-to-GDP ratio by about 2 percentage points by 2055–56.

Addressing the Growth Challenge

As this demographic transition unfolds, the Government will continue to take smart decisions and make sound investments to build Canada's economy of the future and create an economy that works for the middle class.

Faced with an aging population, it is imperative to make greater investments in the skills and technology that will make Canada more productive, competitive and fair—for example, by building our workforce to ensure that all Canadians have the opportunity to fully participate in the labour market, by continuing to be a welcoming country for new immigrants, and by attracting and keeping top talent.

While no single initiative can guarantee sustainable growth in our prosperity, the potential payoff from acting now in a broad range of policy areas is very large, as measures tend to reinforce themselves over time. As an example among many others, policies that succeed in increasing labour force participation and productivity growth to levels similar to those of other top-performing countries would increase Canada's real GDP by more than 20 per cent by 2055 (Chart 5).

Greater investments in people, skills and technology will help deal with the effects of population aging by making Canada more productive, competitive and fair

Chart 5
Real GDP

billions of 2016 dollars
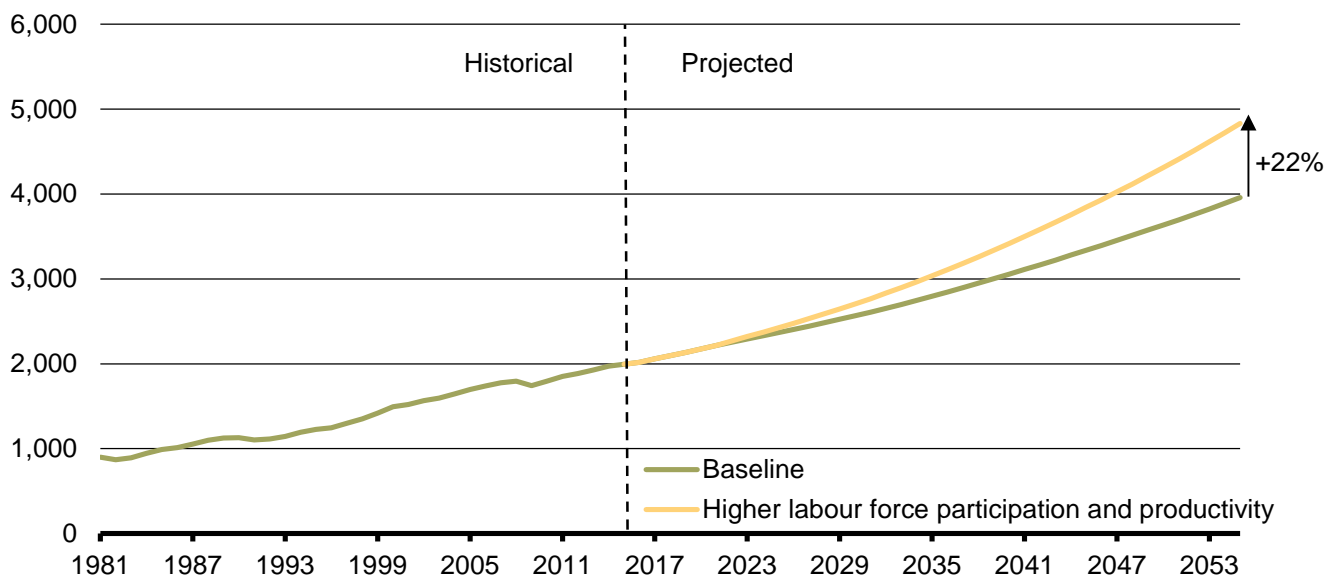
Note: Higher labour force participation assumes that the labour force participation rate of Canadians aged 55-59 is raised to the average labour force participation rate of their counterparts in five high-participation countries (Japan, New Zealand, Norway, Sweden and the U.S.) and that the participation rates of under-represented groups aged 25-54 (Canadians with disabilities, Indigenous people, recent immigrants, women with children and Canadians with a high school diploma or less) are raised to reflect plausible increases in participation arising from increased efforts to promote participation and increased educational attainment. Higher productivity assumes that Canada's productivity growth is raised in line with the average productivity growth of the top G7 performer over the 2000 to 2015 period (from 1.2 per cent per year to 1.6 per cent per year).

Sources: Statistics Canada; Department of Finance Canada calculations.

Methodology and Key Assumptions

Demographic Projections

The demographic projections used in this document are based on medium-growth scenario projections produced by Statistics Canada.[3] Statistics Canada projects the structure of the population by age and sex from one year to the next by adding births and net migrants and subtracting deaths. The demographic assumptions behind these projections are outlined in *Population Projections for Canada (2013 to 2063), Provinces and Territories (2013 to 2038)*, published in 2015. The main assumptions are:

- Life expectancy at birth for females is projected to increase from 83.8 years in 2013 to 88.5 years in 2055. For males, the life expectancy at birth is projected to rise from 79.6 years in 2013 to 86.7 years in 2055.

- The fertility rate for Canada used for the entire projection period is 1.67 children per woman.

- The annual immigration rate is assumed to represent about 0.75 per cent of the total population. When accounting for emigration and returning emigrants, the net immigration rate for Canada is assumed to stand around 0.6 per cent over the projection period.

For the purposes of this document, the population projections produced by Statistics Canada have been adjusted to reflect recent population estimates.

Economic Projections

Over the first six years of the projection (2016–2021), key economic indicators (e.g. real GDP growth and interest rates) are taken from the Department of Finance Canada September 2016 survey of private sector economists, which forms the basis for the fiscal forecast presented in the *2016 Fall Economic Statement*. These results are then extended using the Department of Finance Canada long-term projection model. In this model, real GDP growth is assumed to depend on labour productivity growth and labour input growth. Labour input growth is determined by age- and gender-specific labour force participation and average hours worked. Both are based upon population projections from Statistics Canada by age and gender.

Labour productivity is assumed to grow at about its historical average over the 2022–2055 period. The unemployment rate over the 2016–2021 period is taken from the private sector forecast, which projects a gradual decline to 6.2 per cent by 2021, near its level prior to the 2008–2009 recession. It is assumed to remain at this level over the long term.

Over the medium term (2016–2021), growth in labour supply is projected to continue to contribute significantly to overall GDP growth, albeit somewhat less than over the last four decades. This in part reflects the positive effect of the ongoing recovery in labour markets from the 2008–2009 recession, translating into a falling unemployment rate (which contributes positively to labour supply growth). However, after 2021, the contribution of labour force participation is projected to decline slightly each year (-0.2 percentage points annually) given the increasing rate of retirement among the baby boom generation, dampening labour supply growth (Table 2).

---

[3]   Statistics Canada produces three long-term population projections based on low-, medium- and high-growth scenarios.

Beyond 2021, the unemployment rate is assumed to stabilize and average hours worked are projected to continue their trend decline.

Combined, these factors suggest that the contribution of labour supply to real GDP growth will decline significantly to an average of just 0.5 percentage points per year over the 2022–2055 period, from the 1.6 percentage points over the 1970–2015 period. Given assumed trend productivity growth of 1.2 per cent per year, the same as over the 1970–2015 period, overall growth in real GDP would average 1.7 per cent per year over 2022–2055.

Table 2
Real GDP Growth Projection, Average Annual Growth Rates
per cent, unless otherwise indicated

	1970–2015	2016–2021	2022–2030	2031–2055
Real GDP growth	2.8	1.8	1.6	1.7
Contributions of (percentage points):				
Labour supply growth	1.6	0.8	0.4	0.5
Working-age population	1.5	0.9	0.9	0.7
Labour force participation	0.3	-0.2	-0.4	-0.1
Unemployment rate	-0.1	0.1	0.0	0.0
Average hours per worker	-0.2	-0.1	-0.1	-0.1
Labour productivity growth	1.2	1.0	1.2	1.2

Note: Contributions may not add due to rounding.
Sources: Statistics Canada; Department of Finance Canada calculations.

Fiscal Projections

Using the fiscal projections up to 2021–22 presented in the *2016 Fall Economic Statement* as the starting point, the fiscal projections contained in this document are obtained through an accounting model in which each revenue and expense category is determined independently and is modelled as a function of the underlying demographic and economic projections, with the relationships defined either by current government policies or assumptions.

The model provides a detailed examination of the fiscal implications of population aging on government revenues and expenditures and provides an assessment of long-run fiscal sustainability by simulating long-run debt and deficit paths.

The principal assumptions underlying the fiscal projections from 2022–23 through 2055–56 are:

- The Canada Social Transfer increases by 3 per cent annually, and the Canada Health Transfer and fiscal transfers (i.e. primarily Equalization and Territorial Formula Financing) payments grow in line with nominal GDP.

- Old Age Security (OAS) program benefits grow with the targeted population (65 and over for the OAS pension and the Guaranteed Income Supplement) and inflation to reflect increases in the cost of living.

- Children's benefits grow with the targeted population (less than 18 years old) and inflation to reflect increases in the cost of living.

- Direct program expenses are linked to nominal GDP growth.

- Employment Insurance (EI) benefits grow in line with the projected number of beneficiaries and the projected growth in average weekly earnings.

- The EI premium rate grows according to current program parameters, i.e. EI revenues and expenditures (benefits and administration costs) break even over time.

- All tax revenues, including personal income tax, corporate income tax and Goods and Services Tax revenues, as well as other revenues, are assumed to grow in line with nominal GDP.

- With respect to federal debt charges, new (and maturing) federal debt is (re)financed each year consistent with the Government's medium-term debt strategy at new rates. The effective interest rate on interest-bearing federal debt is assumed to gradually increase from about 3 per cent in 2021–22 to 3.7 per cent by 2029–30 and remain broadly stable around this level thereafter. Investment returns on financial assets (which are included in other revenues) are assumed to equal the borrowing costs (which are included in public debt charges) associated with their purchase.

Detailed Fiscal Projections

Table 3

Long-Term Fiscal Projections

billions of dollars

	2021–22	2025–26	2030–31	2035–36	2040–41	2045–46	2050–51	2055–56
Revenues	355.0	409.5	488.9	587.5	708.3	853.6	1,026.4	1,232.8
Program expenditures	336.5	392.2	472.1	563.1	669.0	792.8	939.3	1,112.9
Public debt charges	33.1	42.3	53.2	63.2	73.2	82.3	89.4	93.4
Budgetary balance	-14.6	-25.0	-36.4	-38.8	-33.9	-21.6	-2.2	26.5
Federal debt	746.4	828.8	992.0	1,183.8	1,366.6	1,501.6	1,554.1	1,483.5
Nominal GDP[1]	2,453.7	2,837.7	3,396.3	4,085.8	4,932.1	5,946.8	7,150.9	8,594.5

[1] On a calendar-year basis.

Table 4

Long-Term Fiscal Projections, Share of GDP

per cent

	2021–22	2025–26	2030–31	2035–36	2040–41	2045–46	2050–51	2055–56
Revenues	14.5	14.4	14.4	14.4	14.4	14.4	14.4	14.3
Program expenditures	13.7	13.8	13.9	13.8	13.6	13.3	13.1	12.9
Public debt charges	1.3	1.5	1.6	1.5	1.5	1.4	1.2	1.1
Budgetary balance	-0.6	-0.9	-1.1	-1.0	-0.7	-0.4	0.0	0.3
Federal debt	30.4	29.2	29.2	29.0	27.7	25.3	21.7	17.3

Table 5

Long-Term Fiscal Projections, Annual Growth

per cent

	2021–22	2025–26	2030–31	2035–36	2040–41	2045–46	2050–51	2055–56
Revenues	4.6	3.4	3.7	3.8	3.8	3.8	3.7	3.7
Program expenditures	3.2	3.8	3.7	3.6	3.5	3.5	3.4	3.5
Nominal GDP[1]	4.0	3.6	3.7	3.8	3.8	3.8	3.7	3.7

[1] On a calendar-year basis.

Sensitivity Analysis

Because long-term projections and the range of possible results are inherently uncertain, the baseline projections presented in this document are not intended to be forecasts. Rather, they provide a plausible baseline that follows from a reasonable set of demographic, economic and fiscal assumptions, which, as this sensitivity analysis shows, is fairly robust to a number of reasonable changes to individual assumptions. On the other hand, larger changes to assumptions or a combination of changes to some of these assumptions can result in a large change in the expected evolution of the long-term economic and fiscal outlook.

Table 6

Description of Alternative Assumptions[1]

alternative assumption less baseline

	High	Low
Demographic:		
Fertility rate (average births per woman)	+0.5 births	-0.5 births
Immigration (per cent of population)	+0.25 p.p.	-0.25 p.p.
Life expectancy at 65	+3 years	-3 years
Economic:		
Total labour force participation rate (per cent)	+2.0 p.p.	-2.0 p.p.
Average weekly hours worked	+1.0 hour	-1.0 hour
Unemployment rate (per cent)	+1.0 p.p.	-1.0 p.p.
Labour productivity (per cent)	+0.5 p.p.	-0.5 p.p.
Interest rates (per cent)	+1.0 p.p.	-1.0 p.p.

Note: p.p. = percentage point.

[1] These alternative assumptions are applied starting in 2022 except for changes in life expectancy, which are gradually applied over the projection horizon.

Table 7

Impact of Alternative Assumptions on Nominal GDP and Real Per Capita GDP Growth, 2022 to 2055

average annual growth, per cent

	Baseline		High		Low	
	Nominal GDP	Real Per Capita GDP	Nominal GDP	Real Per Capita GDP	Nominal GDP	Real Per Capita GDP
Demographic:						
Fertility rate	3.8	1.0	4.0	0.9	3.6	1.1
Immigration	3.8	1.0	4.1	1.0	3.4	1.0
Life expectancy at 65	3.8	1.0	3.8	0.9	3.7	1.1
Economic:						
Total labour force participation rate	3.8	1.0	3.9	1.1	3.7	0.9
Average weekly hours worked	3.8	1.0	3.8	1.1	3.7	0.9
Unemployment rate	3.8	1.0	3.7	1.0	3.8	1.0
Labour productivity	3.8	1.0	4.3	1.5	3.2	0.5

Table 8

Impact of Alternative Assumptions on Nominal GDP and Real Per Capita GDP Levels in 2055

per cent difference relative to baseline

	High		Low	
	Nominal GDP	Real Per Capita GDP	Nominal GDP	Real Per Capita GDP
Demographic:				
Fertility rate	6.6	-3.0	-6.3	3.1
Immigration	10.9	1.4	-10.9	-1.7
Life expectancy at 65	0.5	-2.2	-0.4	2.2
Economic:				
Total labour force participation rate	3.2	3.2	-3.2	-3.2
Average weekly hours worked	3.0	3.0	-3.0	-3.0
Unemployment rate	-1.1	-1.1	1.1	1.1
Labour productivity	18.2	18.2	-15.5	-15.5

Table 9

Impact of Alternative Assumptions on the Federal Deficit and Debt-to-GDP Ratio in 2055–56

per cent of GDP

	Baseline		High		Low	
	Deficit	Debt	Deficit	Debt	Deficit	Debt
Demographic:						
Fertility rate	-0.3	17.3	-0.3	18.3	-0.3	16.1
Immigration	-0.3	17.3	-0.8	10.0	0.3	26.3
Life expectancy at 65	-0.3	17.3	0.1	22.0	-0.7	13.1
Economic:						
Total labour force participation rate	-0.3	17.3	-0.6	11.9	0.0	23.4
Average weekly hours worked	-0.3	17.3	-0.6	12.3	0.0	22.9
Unemployment rate	-0.3	17.3	-0.2	19.1	-0.4	15.4
Labour productivity	-0.3	17.3	-1.4	2.3	1.0	35.8
Interest rates	-0.3	17.3	0.4	28.1	-0.7	9.3