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SCENARIO ANALYSIS UPDATE: COVID-19 PANDEMIC AND OIL PRICE SHOCKS



OFFICE OF THE PARLIAMENTARY BUDGET OFFICER
BUREAU DU DIRECTEUR PARLEMENTAIRE DU BUDGET

The Parliamentary Budget Officer (PBO) supports Parliament by providing economic and financial analysis for the purposes of raising the quality of parliamentary debate and promoting greater budget transparency and accountability.

This report provides an updated scenario analysis to help parliamentarians gauge potential economic and fiscal implications of the COVID-19 pandemic and recent oil market developments.

This report incorporates announced federal measures up to and including 7 April 2020.

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Summary

PBO published its first scenario analysis of COVID-19 pandemic and oil price shocks on March 27 to help parliamentarians gauge potential economic and fiscal implications.

This report provides an updated scenario analysis that incorporates new federal measures announced up to and including April 7, as well as revised estimates of previously announced fiscal measures. **The economic scenario is unchanged from our March 27 report.** PBO will update its economic scenario in a future report.

As indicated in our previous report, we stress that this scenario is not a forecast of the most likely outcome. It is an illustrative scenario of one possible outcome.

Fiscal scenario

Our fiscal results include \$105.5 billion in federal budgetary measures that have been announced as of April 7 based on Finance Canada and PBO cost estimates.

- Based on our economic scenario and including announced federal measures, the budget deficit would increase to \$27.4 billion in 2019-20 and then to \$184.2 billion in 2020-21.
- Relative to the size of the Canadian economy, the deficit would be 1.2 per cent of GDP in 2019-20 and 8.5 per cent of GDP in 2020-21.

To put this in historical perspective, the last time the budgetary deficit was near 8.5 per cent of GDP was in 1984-85. Compared to our March 27 scenario, the deficit is \$0.7 billion higher in 2019-20 and \$71.5 billion higher in 2020-21.

- Rising budget deficits and lower nominal GDP boost the federal debt-to-GDP ratio to 41.4 per cent in 2020-21.
- The last time the federal debt-to-GDP ratio was above 41.4 per cent was in 2002-03. This level, however, remains well below the peak (since 1966-67) of 66.6 per cent of GDP reached in 1995-96.

Despite the recently announced measures, additional fiscal measures may be required to support the economy in the coming months.

Moreover, after support measures are provided, fiscal *stimulus* measures may be required to ensure that the economy reaches lift-off speed, especially if

consumer and business behaviour does not quickly revert back to “normal” conditions.

Recall that prior to the COVID-19 and oil price shocks, the Government’s balance sheet was healthy. Further, given credit market access at historically low rates, and looking to historical experience, suggests that the Government could undertake additional significant borrowing if required.

1. Key assumptions and judgements

The key assumptions and judgements in this update are effectively unchanged from our March 27 report.

In our updated scenario analysis, we continue to assume that COVID-19 physical distancing and self-isolation measures will remain in place in Canada through August, lasting roughly 6 months in total¹ and that these measures will be sufficient to “flatten” or “plank” the epidemiological curve of COVID-19 cases.²

In addition, we maintain our assumption that members of the Organization of the Petroleum Exporting Countries (OPEC) and its partner countries will not limit oil production to target relatively balanced global oil markets.³

We assume that the Bank of Canada will maintain the policy interest rate target at its current level of 0.25 per cent through 2020. We also assume that current and future monetary and financial policy measures will prevent widespread personal and business bankruptcies. Additional fiscal policy measures beyond those announced as of April 7 are not included in this scenario.

Lastly, we assume that the new fiscal policy measures announced after March 18 will not have a stimulative impact on the Canadian economy; instead, in conjunction with monetary and financial policy measures⁴, the new fiscal measures will help to support the economy and help to prevent widespread personal and business bankruptcies.

Implicit in our assumptions is that as new fiscal policy measures to support households and businesses are put in place, the support from assumed monetary and financial measures is transferred to the Government’s balance sheet.

Given that large segments of the economy are shutdown and public health mitigation measures are in place, fiscal transfers to households and businesses are unlikely to stimulate consumer spending and business investment as they would under normal conditions when the economy is facing a shortfall in aggregate demand.

For a more detailed description of our key assumptions and judgements, please consult our March 27 report.⁵

2. Economic scenario

Table 2-1 presents a summary of key economic indicators in our scenario analysis. **The economic scenario is unchanged from our March 27 report.** Appendix A presents our detailed economic scenario. For a detailed description of the economic scenario, please consult our March 27 report.⁶

Table 2-1 Economic scenario: key indicators

	2020Q1	2020Q2	2020Q3	2020Q4	2020
Real GDP growth (%)*					
April 9 scenario	-2.5	-25.0	0.0	5.0	-5.1
Nominal GDP level (\$ billions)					
April 9 scenario	2,323	2,105	2,105	2,135	2,167
Unemployment rate (%)					
April 9 scenario	7.2	14.8	15.0	12.7	12.4
WTI oil price (\$US)					
April 9 scenario	45	26	28	31	32
WCS oil price (\$US)					
April 9 scenario	28	13	15	15	18

Source: Parliamentary Budget Officer.

Note: * Real GDP growth rates are expressed as quarter-over-quarter at annual rates.

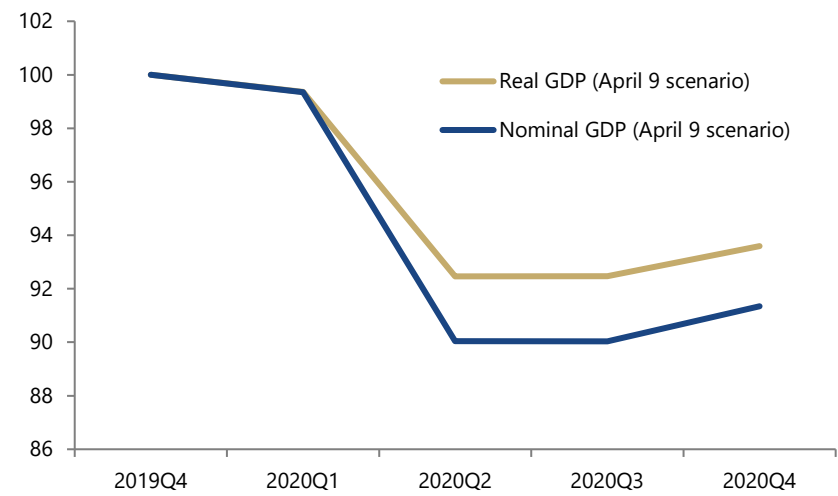
The assumed declines in real GDP and the GDP price level due to the COVID-19 pandemic and oil price shocks, reduce the level of nominal GDP—the single broadest measure of the Government’s tax base—by 10.0 per cent relative to its pre-crisis level (that is, the level of nominal GDP in 2019Q4) in the second and third quarters of 2020 (Figure 2-1). Over the same period, the level of real GDP is assumed to remain 7.5 per cent below to its pre-crisis level (2019Q4).

Real GDP growth and GDP inflation in the fourth quarter are as assumed to rebound somewhat; however, the level of nominal GDP will remain well below its pre-crisis level (at 8.6 per cent). The level of real GDP is assumed to be 6.4 per cent below its pre-crisis level in the fourth quarter.

Based on our unemployment rate assumptions, the number of unemployed individuals rises from 1.155 million in the fourth quarter of 2019, to 3.067 million in the third quarter of 2020.⁷

Figure 2-1 Level of nominal and real GDP relative to 2019Q4

2019Q4 = 100



Sources: Statistics Canada and Parliamentary Budget Officer.

3. Fiscal scenario

To generate our fiscal scenario, we simulated our projection model using the economic scenario described in the previous section. In addition, we applied judgement in some cases to better capture the fiscal impact of the economic downturn on certain revenue and spending components.

Table 3-1 details the \$105.5 billion in federal budgetary measures that has been announced as of April 7. The value of these measures is based on Finance Canada and PBO estimates.⁸ Measures that include “up to” amounts are assumed to be fully spent in their respective fiscal years. Appendix B details the “other” measures shown in Table 3-1. The Government is also providing credit and liquidity support through the Business Credit Availability Program (BCAP) and other programs.⁹

Table 3-1 COVID-19 federal budgetary measures as of April 7

\$ billions	2019-20	2020-21
COVID-19 Response Fund	0.5	0.6
Funding for Personal Protective Equipment and Supplies	0.2	1.8
Canada Emergency Response Benefit*	-	22.3
Enhanced GST Credit*	-	5.7
Enhanced Canada Child Benefit*	-	1.9
Temporary Business Wage Subsidy	-	1.0
Canada Emergency Wage Subsidy	-	71.0
Canada Student Loan Payments*	-	0.2
Support for Indigenous Communities	-	0.3
Support for the homeless	-	0.2
Support for women’s shelters and sexual assault centres	-	0.1
Support for Seniors, Children and Youth	0.0	0.0
Lower RRIF Minimum Withdrawal*	-	0.5
Support for the Air Transportation Sector*	0.0	0.1
Other	0.0	0.0
Total	0.7	105.5

Sources: Finance Canada and Parliamentary Budget Officer.

Note: * Indicates a PBO cost estimate. All other estimates are based on Finance Canada costing. Totals may not add due to rounding.

In our March 27 scenario, we estimated that the budgetary deficit would amount to \$112.7 billion in 2020-21. This estimate included \$28.5 billion in federal budgetary measures that were announced on March 11 and March 18, which are also reflected in Table 3-1.

Given that our economic assumptions are unchanged from the March 27 scenario, the revision to our estimate of the budgetary deficit reflects measures announced after March 18, as well as differences between PBO and Finance Canada cost estimates (Table 3-2).

Table 3-2 Revisions to the budgetary balance

\$ billions	2019-20	2020-21
Budgetary balance (March 27 scenario)	-26.7	-112.7
COVID-19 budgetary measures in March 27 scenario	0.0	28.5
Impact of measures on public debt charges	0.0	0.2
Revised budgetary balance before measures	-26.7	-84.0
COVID-19 budgetary measures as of April 7	-0.7	-105.5
Adjustment to EI benefits*	0.0	6.1
Impact of measures on public debt charges	0.0	-0.8
Budgetary balance (April 9 scenario)	-27.4	-184.2

Source: Parliamentary Budget Officer.

Note: * Our March 27 scenario included \$6.1 billion in Employment Insurance benefits in 2020-21 that will now be accounted for as payments under the new Canada Emergency Response Benefit. A negative (positive) number reduces (increases) the budgetary balance. Totals may not add due to rounding.

Table 3-3 below presents the fiscal results for key aggregates. Appendix C presents the detailed fiscal scenario. Appendix D compares the fiscal scenario to our March 27 results.

Based on our economic scenario and including \$105.5 billion in federal budgetary measures, the budget deficit would reach \$184.2 billion in 2020-21.¹⁰ Relative to the size of the Canadian economy, the deficit would be 8.5 per cent of GDP in 2020-21. To put this in historical perspective, the last time the budgetary deficit was near 8.5 per cent of GDP was in 1984-85.

Budgetary revenues in 2020-21 are largely unchanged from our March 27 scenario. The modest revision reflects, in part, the lower Registered Retirement Income Fund (RRIF) minimum withdrawal and the foregone interest and penalties related to the deferral of personal and corporate income tax payments.¹¹

Program spending is \$74.0 billion higher in 2020-21 compared to our March 27 scenario. This increase primarily reflects the federal measures

announced after March 18, in particular the Canada Emergency Wage Subsidy (\$71.0 billion) and the Canada Emergency Response Benefit (\$22.3 billion, of which \$7.3 billion is incremental).¹²

Public debt charges are \$1.4 billion higher in 2020-21. This mainly reflects the impact of increased debt accumulation.

Rising budgetary deficits and lower nominal GDP boost the federal debt-to-GDP ratio to 41.4 per cent in 2020-21, which is 3.3 percentage points higher compared to our March 27 scenario.

Table 3-3 Fiscal scenario: key indicators

\$ billions	2018-19	2019-20	2020-21
Budgetary revenues			
April 9 scenario	332.2	339.9	314.2
March 27 scenario	332.2	339.8	310.2
		0.0	3.9
Program spending			
April 9 scenario	322.9	343.6	475.4
March 27 scenario	322.9	342.8	401.4
		0.7	74.0
Public debt charges			
April 9 scenario	23.3	23.7	23.0
March 27 scenario	23.3	23.7	21.6
		0.0	1.4
Budgetary balance			
April 9 scenario	-14.0	-27.4	-184.2
March 27 scenario	-14.0	-26.7	-112.7
		-0.7	-71.5
Federal debt-to-GDP (%)			
April 9 scenario	30.8	31.0	41.4
March 27 scenario	30.8	30.9	38.1
		0.0	3.3

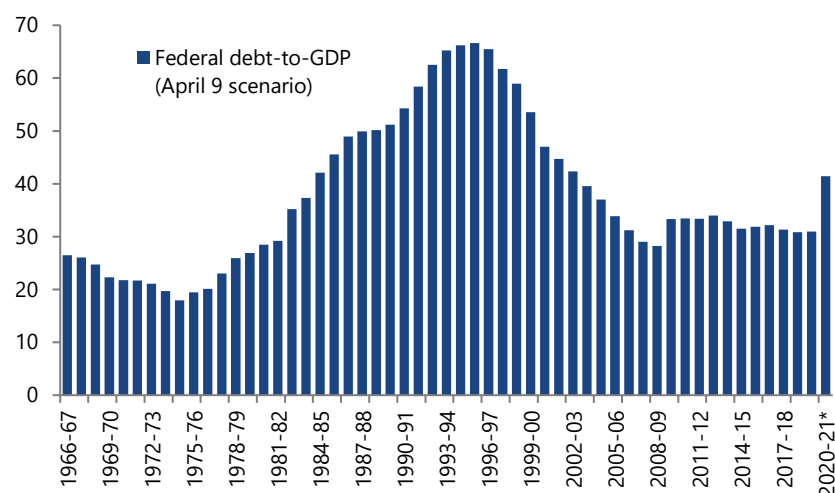
Sources: Finance Canada and Parliamentary Budget Officer.

Note: Totals may not add due to rounding.

Figure 3-1 puts the increase in the federal debt-to-GDP to 41.4 per cent in 2020-21 into historical perspective. The last time the federal debt-to-GDP ratio was above 41.4 per cent was in 2002-03. This level, however, remains well below the peak (since 1966-67) of 66.6 per cent of GDP reached in 1995-96.

Figure 3-1 Federal debt-to-GDP

Per cent of GDP



Sources: Finance Canada and Parliamentary Budget Officer.

Note: *Federal debt-to-GDP in 2019-20 and 2020-21 is based on the April 9 scenario.

Despite the recently announced measures, additional fiscal measures may be required to support the economy in the coming months.

Moreover, after support measures are provided, fiscal *stimulus* measures may be required to ensure that the economy reaches lift-off speed, especially if consumer and business behaviour does not quickly revert back to “normal” conditions.

Recall that prior to the COVID-19 and oil price shocks, the Government’s balance sheet was healthy. Further, given credit market access at historically low rates, and looking to historical experience, suggests that the Government could undertake additional significant borrowing if required.

For example, the measures that were implemented during the peak years of World War II resulted in massive deficits (averaging 21 per cent of GNP per year over 1942 to 1945), which were not permanent in nature. Indeed, shortly following World War II, the federal government registered the largest-ever budgetary surplus as a share of the economy (5 per cent of GNP in 1947).¹³

Appendix A: Detailed economic scenario

% unless otherwise indicated	19Q4	20Q1	20Q2	20Q3	20Q4	2020
Real GDP growth						
April 9 scenario	0.3	-2.5	-25.0	0.0	5.0	-5.1
GDP inflation						
April 9 scenario	4.1	0.0	-10.0	0.0	1.0	-0.9
Nominal GDP growth						
April 9 scenario	4.5	-2.6	-32.5	0.0	6.0	-5.9
Nominal GDP (\$ billions)						
April 9 scenario	2,338	2,323	2,105	2,105	2,135	2,167
3-month treasury rate						
April 9 scenario	1.7	1.2	0.3	0.3	0.2	0.5
10-year government bond rate						
April 9 scenario	1.5	1.1	0.9	0.9	0.9	0.9
Exchange rate (US\$/C\$)						
April 9 scenario	75.8	75.7	70.0	68.1	67.4	70.3
Unemployment rate						
April 9 scenario	5.7	7.2	14.8	15.0	12.7	12.4
CPI inflation (year/year)						
April 9 scenario	2.1	2.1	0.6	0.5	0.4	0.9
WTI oil price (\$US)						
April 9 scenario	57	45	26	28	31	32
WCS oil price (\$US)						
April 9 scenario	38	28	13	15	15	18

Sources: Statistics Canada and Parliamentary Budget Officer.

Note: The April 9 economic scenario is unchanged from the March 27 scenario.

Appendix B: Other federal budgetary measures

\$ billions	2019-20	2020-21
Liquidity support measures		
Insured Mortgage Purchase Program (IMPP)*	0.0	0.4
Co-Lending Program for Small and Medium-Sized Enterprises*	0.0	0.4
Lending for agriculture, fisheries and aquaculture*	0.0	0.1
Income tax deferrals: individuals, businesses and trusts*	0.0	-0.7
Other support measures		
Families choosing to stay on the land	0.0	0.0
Food support	0.0	-0.1
International assistance announced on April 5	0.0	-0.1
Canadian Radio-television and Telecommunications Commission licencing waiver	0.0	0.0
Total	0.0	0.0

Sources: Finance Canada and Parliamentary Budget Officer.

Note: * Indicates a PBO cost estimate. All other estimates are based on Finance Canada costing. A negative (positive) number reduces (increases) the budgetary balance. Totals may not add due to rounding.

Appendix C: Detailed fiscal scenario

\$ billions	2018-19	2019-20	2020-21
Personal income taxes	163.9	170.8	158.7
Corporate income taxes	50.4	48.2	43.6
Non-resident income taxes	9.4	9.0	8.1
Excise taxes/duties	57.2	57.3	47.1
Fuel charge proceeds	0.0	2.8	4.9
Employment Insurance premium revenues	22.3	22.7	23.0
Other revenues	29.1	29.1	28.8
Total budgetary revenues	332.2	339.9	314.2
Elderly benefits	53.4	56.1	58.9
Employment Insurance benefits	18.9	20.8	39.1
Children's benefits	23.9	24.1	26.6
Major transfers to other levels of government	75.9	78.9	80.4
Fuel charge proceeds returned	0.7	3.4	5.3
Other transfer payments	51.8	54.6	152.6
Operating and capital expenses	98.4	105.7	112.5
Total program expenses	322.9	343.6	475.4
Public debt charges	23.2	23.7	23.0
Budgetary balance	-14.0	-27.4	-184.2
Federal debt	685.5	713.1	897.3
Per cent of GDP			
Budgetary revenues	14.9	14.8	14.5
Program expenses	14.5	14.9	21.9
Public debt charges	1.0	1.0	1.1
Budgetary balance	-0.6	-1.2	-8.5
Federal debt	30.8	31.0	41.4

Sources: Finance Canada and Parliamentary Budget Officer.

Note: Totals may not add due to rounding.

Appendix D: Comparison to March 27 scenario

\$ billions	2019-20	2020-21
Personal income taxes	-	-0.4
Corporate income taxes	-	2.5
Non-resident income taxes	-	-
Excise taxes/duties	-	-0.2
Fuel charge proceeds	-	-
Employment Insurance premium revenues	-	-
Other revenues	0.0	2.0
Total budgetary revenues	0.0	3.9
Elderly benefits	0.0	0.0
Employment Insurance benefits	0.0	-6.1
Children's benefits	0.0	0.0
Major transfers to other levels of government	0.0	0.0
Fuel charge proceeds returned	0.0	0.0
Other transfer payments	0.7	80.1
Operating and capital expenses	0.0	0.0
Total program expenses	0.7	74.0
Public debt charges	0.0	1.4
Budgetary balance	-0.7	-71.5
Federal debt	0.7	72.2
Per cent of GDP		
Budgetary revenues	0.0	0.2
Program expenses	0.0	3.4
Public debt charges	0.0	0.1
Budgetary balance	0.0	-3.3
Federal debt	0.0	3.3

Source: Parliamentary Budget Officer.

Note: Totals may not add due to rounding.

Notes

1. For a description of the public health measures, please consult the Public Health Agency's *Community-based measures to mitigate the spread of coronavirus disease (COVID-19) in Canada* available at: <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/public-health-measures-mitigate-covid-19.html> (retrieved 23 March 2020), as well as *Government's Resources for Canada businesses*: <https://www.canada.ca/en/services/business/maintaingrowimprovebusiness/resources-for-canadian-businesses.html> (retrieved 23 March 2020).
2. Recall our assumption in the March 27 scenario that these measures will be sufficient to "flatten" or "plank" the epidemiological curve of COVID-19 cases. As we noted, this is purely conjecture on our part given the extreme uncertainty surrounding the pandemic and the impact of measures required to contain it.
3. For additional detail, see the EIA's March 11 *Short-term Energy Outlook*, available at: <https://www.eia.gov/outlooks/steo/marketreview/crude.php>. Following OPEC's March 5 and 6 meetings, its members and partners failed to agree on how much to limit their oil production.
4. For a description of monetary and financial measures to support the economy and financial system, see: <https://www.bankofcanada.ca/markets/market-operations-liquidity-provision/covid-19-actions-support-economy-financial-system/>.
5. Available at: https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-1920-033-S/RP-1920-033-S_en.pdf.
6. See Note 5.
7. This is based on the assumption that the labour force participation rate through December 2020 remains unchanged from its February 2020 level.
8. Finance Canada's estimates are taken from the table *Canada's COVID-19 Economic Response Plan— Cost and Implementation* available at: <https://www.canada.ca/en/department-finance/news/2020/04/the-canada-emergency-wage-subsidy.html> (retrieved 2 April 2020).

PBO's cost estimates are available at: <https://www.pbo-dpb.gc.ca/en/covid-19> (retrieved 2 April 2020).
9. For additional detail, please consult: https://www.canada.ca/en/department-finance/economic-response-plan/covid19-businesses.html#Increasing_credit_available.
10. PBO estimated that compensation to First Nations children and caregivers who were affected by the on-reserve child welfare system could range from \$0.9 billion to \$2.9 billion, if payments were made by the end of 2020 (see: <https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-2021->

[001-M/RP-2021-001-M_en.pdf](#)). However, given the uncertainty regarding the resolution of these claims and their timing, we have not included a cost estimate in our current scenario.

11. The deferral of personal and corporate income tax payments does not have a direct budgetary impact in 2020-21.
12. The Canada Emergency Response Benefit (CERB) was announced on March 25. Some of the estimated \$22.3 billion costs of the CERB were not reflected in our March 27 scenario. The CERB combined and expanded the previously announced Emergency Care Benefit and Emergency Support Benefit, and the estimated costs of these two defunct measures were reflected in our March 27 scenario. Furthermore, we estimate that \$6.1 billion of CERB payments would have otherwise been paid as Employment Insurance (EI) benefits. These estimated costs were reflected in the March 27 scenario as EI expenses.
13. For a brief discussion of federal fiscal room in the current pandemic situation and oil price shock, see PBO's March 20 blogpost at: <https://www.pbo-dpb.gc.ca/en/blog/news/pbo-estimate-federal-fiscal-room-in-fiscal-sustainability-report-2020--pbo-estimate-federal-fiscal-room-in-fiscal-sustainability-report-2020>.