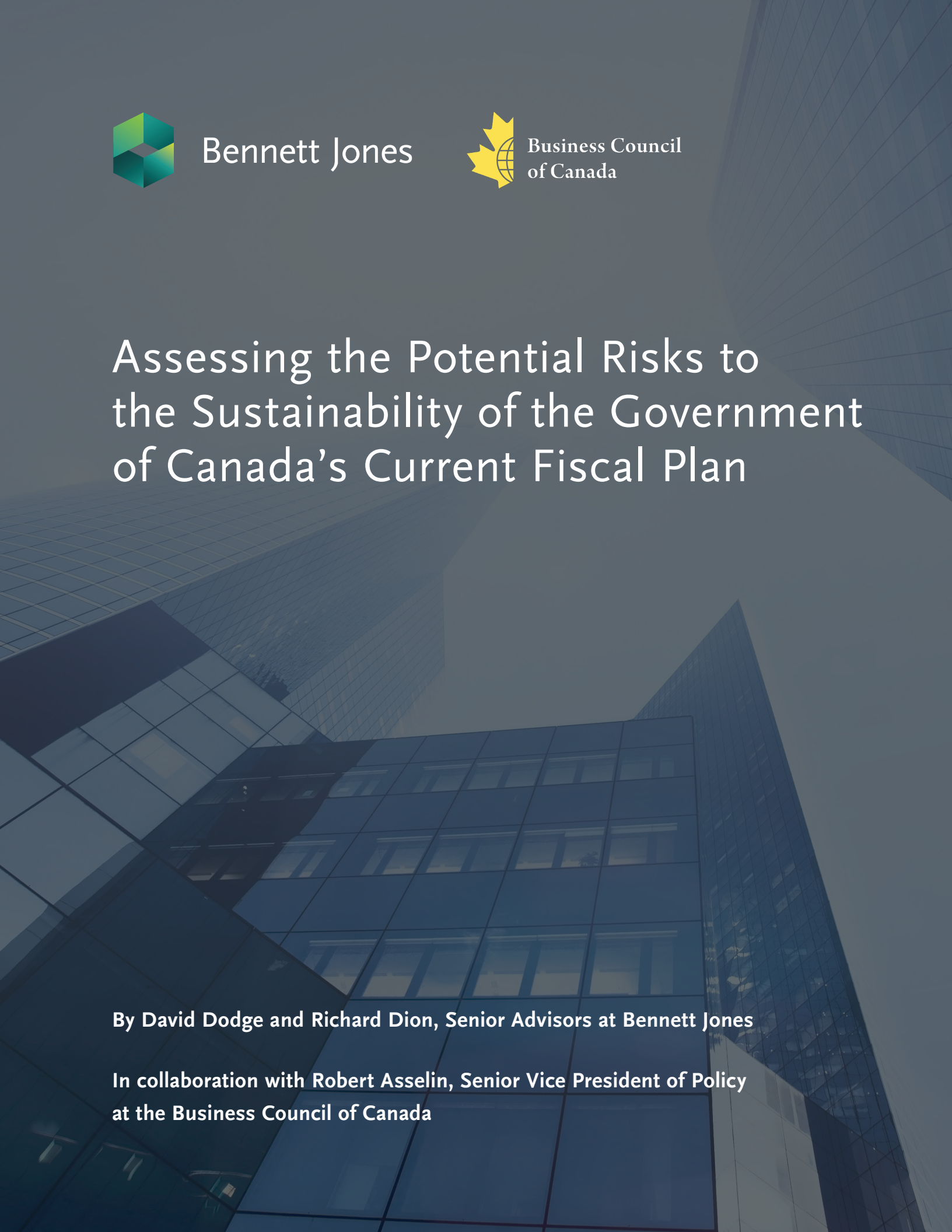

Bennett Jones

Business Council of Canada

Assessing the Potential Risks to the Sustainability of the Government of Canada's Current Fiscal Plan

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Abstract

The purpose of this paper is to explore the way two fiscal anchors, the debt/GDP ratio and the interest cost revenue ratio, are likely to evolve over the decade ahead (2032-33) under five plausible economic scenarios and thus to assess the implications of these two anchors as a guide to sustainable fiscal policy actions.

In Budget 2022 and the November economic statement the federal government laid out a fiscal plan against a plausible but optimistic set of assumptions about the economic and interest rate context in which it would be operating through 2027. In our base scenario, we incorporate these assumptions and extend the fiscal plan through to 2032. In this base scenario, the net debt/GDP ratio continues to decline to pre-COVID level by 2032 and interest cost/revenue ratio stays below 10%. Thus, **if** the federal government were to limit spending and borrowing to levels set out in the Fall Economic Statement (FES) 2022, these two ratios indicate that the federal government would be able to continue to access capital markets without paying a higher risk premium, although at interest rates higher than in the pre-COVID period as global interest rates are permanently higher.

But there are three big risks to this base scenario even assuming that real potential growth of 1.8% per annum and inflation of 2% are achieved and the current tax structure remains in place:

1. planned spending is unlikely to be adequate to deliver the policy goals set out by the government;
2. there is a high likelihood of a more severe recession in 2023; and,
3. medium-run inflation pressures are highly likely to continue and interest rates to remain well above pre-COVID levels.

When each of these risks is modelled **individually**, the debt/GDP ratio does decline somewhat but remains at or above 40% every year to 2032 and the interest cost/revenue ratio rises somewhat above 10% by or before fiscal year (FY) 2027-28.

As these three risks are likely to occur **simultaneously** at least to some degree, in a fifth scenario the two ratios are calculated taking account of all three risks combined. In this case the debt/GDP ratio would remain near 50% throughout the whole period and the interest cost/revenue ratio would steadily rise well above 10% especially beyond 2026-27. Were this to be the case, continued federal government access to capital markets on current favourable terms would be seriously threatened and the 10-year rate on Canada bonds could well be higher than 3.7% toward the end of the 2020's. Moreover, as the knock-on effect of higher rates and fiscal deterioration could permanently impair the private (and public) investments needed to secure the 1.8% potential real growth assumed in our analysis, our conclusion is that the fiscal plan as laid out in Budget 22 and the fall FES is unlikely to be sustainable over the decade ahead.

Résumé

Le présent document vise à explorer la façon dont deux mesures d'ancrage budgétaire, soit le ratio dette-PIB et le ratio des frais d'intérêt par rapport aux revenus, sont susceptibles d'évoluer au cours de la décennie à venir (2032-2033) selon cinq scénarios économiques plausibles, et du coup à dégager ce que ces deux mesures impliquent pour la soutenabilité des politiques budgétaires.

Dans le Budget de 2022 et dans l'Énoncé économique de novembre, le gouvernement a présenté un plan budgétaire fondé sur un ensemble d'hypothèses plausibles, mais optimistes concernant le contexte économique et les taux d'intérêt avec lesquels il devra composer jusqu'en 2027. Dans notre scénario de base, nous intégrons ces hypothèses et prorogeons le plan budgétaire jusqu'en 2032. Toujours dans ce scénario, le ratio dette-PIB continue de diminuer et s'établit au niveau antérieur à la COVID-19 d'ici 2032 et le ratio des frais d'intérêts par rapport aux revenus demeure inférieur à 10 %. Par conséquent, si le gouvernement fédéral limitait les dépenses et les emprunts aux niveaux précisés dans l'Énoncé de 2022, ces deux ratios indiquent que le gouvernement fédéral serait en mesure de continuer d'accéder aux marchés financiers sans devoir payer une prime de risque plus élevée, bien qu'à des taux d'intérêt plus élevés qu'avant la COVID puisque les taux d'intérêt mondiaux sont en permanence plus élevés.

Toutefois, ce scénario de base comporte trois risques importants, même en supposant que le potentiel réel de croissance de 1,8 % par année et l'inflation de 2 % sont atteints, et que la structure fiscale actuelle demeure en place:

1. il est peu probable que les dépenses prévues soient suffisantes pour atteindre les objectifs stratégiques établis par le gouvernement
2. il existe une forte probabilité qu'une récession plus grave ait lieu en 2023, et,
3. les pressions inflationnistes à moyen terme sont très susceptibles de se poursuivre et il est très probable que les taux d'intérêt restent bien au-dessus de ceux d'avant la pandémie.

Lorsque chacun de ces risques est modélisé **individuellement**, le ratio dette-PIB diminue quelque peu, mais il demeure à 40 % ou plus chaque année jusqu'en 2032, et le ratio des frais d'intérêt par rapport aux revenus augmente quelque peu au-dessus de 10 % en 2027-2028 ou avant.

Comme il est probable que ces trois risques se matérialisent **simultanément** au moins dans une certaine mesure, dans un cinquième scénario, les deux ratios sont calculés en tenant compte des trois risques combinés. Dans ce cas, le ratio dette-PIB demeurerait près de 50 % tout au long de la période et le ratio des frais d'intérêt par rapport aux revenus augmenterait de façon constante, bien au-delà de 10 %, surtout après 2026-2027. Si tel était le cas, l'accès continu du gouvernement fédéral aux marchés financiers selon les modalités favorables actuelles serait sérieusement menacé et le taux des obligations du Canada à 10 ans pourrait bien être supérieur à 3,7 % vers la fin de 2020. De plus, comme l'effet d'entraînement d'une hausse des taux et d'une détérioration des finances publiques pourrait nuire de façon permanente aux investissements privés (et publics) nécessaires pour obtenir éventuellement une croissance réelle de 1,8 % que nous avons supposée dans notre analyse, nous concluons que le plan budgétaire tel qu'il est présenté dans le Budget de 2022 et l'Énoncé économique de l'automne ne sera probablement pas viable pendant la prochaine décennie.

Introduction

To counter the negative impact of COVID-19 on 2020 GDP, the government of Canada dramatically increased spending to support the income of Canadians. This huge spending increase, when combined with a dramatic easing of monetary policy, was very successful in putting a floor under falling Canadian output in the spring and summer of 2020 and in fostering a stunningly rapid recovery beginning in the fall of 2020.

The consequence of this fiscal policy was a massive deficit of $328 billion in FY 2020-21 and a net debt/GDP ratio that ballooned to 52%, the highest level on record this century and dramatically higher than the roughly 35% ratio achieved on average since the Great Financial Crisis.

Clearly, the ballooned levels of debt and deficits in FY 2021-22 that resulted mainly from spending increases in 2020 are unlikely to be sustainable. Action to restore a sustainable balance between revenue and expenditure was, and continues to be, required. The question was and remains: "Do the appropriate indicators used to guide fiscal actions (both tax and spending) back to a balance indicate that current planned fiscal actions are compatible with sustainable borrowing over the medium run?"

The evolution over time of the ratios of net debt/GDP and interest cost/revenue provides useful indicators of the future sustainability of the government's access to capital markets and hence the economic and political sustainability of its public finances. There is no precise number for either of these ratios above which the government's public finances become unsustainable and access to capital markets problematic. We have argued in the past that an interest cost/revenue ratio above 10% and a federal debt/GDP ratio that is not declining steadily from close to the 50% where it currently stands signal risks of unsustainability. At the same time, we have argued that to be useful, these indicators must be calculated on a forward-looking basis grounded on realistic assumptions about the uncertain evolution of global and national economic and geopolitical circumstances. Since the future evolution of those circumstances is unknown, to be useful calculations should be made for several possible economic scenarios including both favourable and unfavourable ones. Judgment must also be made about the degree to which the streams of program spending and taxes planned by the government match what realistically would be required to achieve the economic and social goals set out in the budget.

While the **actual** revenue and expenditure balance in the future will depend on uncertain global economic, political, and financial developments, **planned** taxes and expenditures should lead to a fiscal balance which implies a sustainable level of borrowing under a variety of potential economic developments. The anchor to guide planning sustainable fiscal actions should provide a good indicator of when and under what conditions those actions are likely to facilitate sustainable borrowing conditions.

The purpose of this paper is to explore the way two possible fiscal anchors are likely to evolve over the decade ahead (to 2032-33) under five plausible economic scenarios and thus to assess the implications of these two anchors as a guide to sustainable fiscal policy actions.

The exploration in this paper is done on the basis of four key assumptions:

1. that expenditure policy to achieve a sustainable fiscal balance does not impact the underlying **structure** of the economy;
2. that **potential** real growth over the decade is on average 1.8% per annum;
3. that **monetary** policy remains geared to achieve 2% inflation; and,
4. that the tax **structure** remains largely the same so that tax revenues in any given year are affected only by changes in the level of nominal GDP.

By making these assumptions one is able to assess the "pure" impact of planned spending and revenue streams (as set out in Budget 2022) on two fiscal guardrails, the net debt/GDP ratio and the interest cost/revenue ratio, under different scenarios about GDP growth, real spending per capita and interest rates.

The analysis begins with a base scenario (#1) which incorporates the spending and tax policies as well as the economic assumptions set out in the November 2022 Fall Economic Statement (FES 2022), which refreshed Budget 2022, released in April 2022. It assumes that inflation is not overly sticky and eventually returns to target with no need for a full-fledged recession in the meantime, only for a temporary stagnation of the economy in 2023 which would involve a shallow, technical recession over part of the year.

We then examine the evolution of the two fiscal ratios under **four alternative scenarios**:

- **increased spending** relative to the base scenario from 2024 onwards: this scenario assumes that real program spending per capita is maintained at its 2023-24 level until 2027-28 instead of steadily falling over these years, and subsequently increases by 0.9% per year as in the base scenario (#2);
- **a full-blown recession in 2023**: this scenario assumes that a combination of more persistent supply constraints, more sticky inflation, higher interest rates and a global recession result in a full-blown recession in Canada in 2023, which manages to bring CPI inflation close to target by the end of 2024 (#3);
- **lower supply** resulting in permanently higher interest rates: this scenario tries to illustrate the impact that supply constraints would have if they became a permanent feature of the world economy in the medium term: persistently higher real interest rates would be required to dampen demand to levels consistent with permanently reduced supply if inflation was to be kept on target (#4); and,
- **a combination of these three scenarios**: a recession in 2023 with lower supply in the medium term and increased spending all the way through (#5).

In the rest of this paper, we first briefly discuss the debt ratio and the interest cost ratio as tools for assessing the potential risks to fiscal stability. After that, we examine each of the five scenarios in more detail, show how the debt ratio and the interest cost ratio evolve in each case and draw the implications of that for risks to fiscal stability. In a penultimate section, we summarize our results and lay out our general conclusions regarding the fiscal risks ahead. We close our discussion with brief remarks on the usefulness of the debt ratio and interest cost ratio and on the key message they leave about fiscal sustainability over the next decade out of the scenarios we examined. The message is that there is a significant risk that both ratios exceed comfortable levels over the remainder of this decade, both because economic conditions will turn out to be more difficult than assumed in the FES 2022 and because the spending budgeted will turn out to be insufficient to achieve the policy goals promised.

Annexe 1 provides a technical analysis of the debt ratio and the interest cost ratio and their drivers over the period 1977-2020. It also discusses the relationships between the two ratios, which are not independent of each other.

The Debt Ratio and the Interest Cost Ratio

In this paper we use the debt-to-GDP ratio and the interest cost-to-revenue ratio as tools for assessing the potential risks to fiscal stability, and hence the potential needs for preemptive fiscal adjustment, which emerge from budget scenarios extending to 2032. The debt-to-GDP ratio is the most widespread measure of fiscal anchor for advanced economies whereas the interest cost-to-revenue ratio has drawn increased attention as a complementary anchor in recent years.

A high and rising debt-to-GDP ratio may raise concerns for fiscal stability as it signals increasing risks of rising premia on borrowing rates and hence increasing difficulty of borrowing the amounts required to finance both the fiscal deficit and net capital investment at reasonable rates of interest. Indeed, at some point, financial markets would provide incentives to limit the rise in the debt by lowering credit ratings and requiring increasing premia to acquire and hold it, thus making the cost of servicing the debt more expensive by comparison to fiscal revenues. Hence the particular relevance of the interest cost-to-revenue ratio as a fiscal gauge in circumstances such as these when interest rates paid on borrowings vary a lot or reach very high or very low values.

The difficulty in trying to assess the risks arising from a high and rising debt ratio in forward-looking scenarios is that the thresholds beyond which the debt ratio may induce increasing costs of financing would depend on several factors that are next to impossible to evaluate beforehand. Orszag, Rubin and Stiglitz (2021) make the point that any such threshold "depends on investor perception, the state of financial markets, and other variables that are beyond the purview of most fiscal models and that vary over time and across different environments. The threshold also depends on political economy considerations, such as the degree of social willingness to accept higher taxes and/or lower spending to address fiscal instability."[1] This last consideration suggests that, when assessing risks to future fiscal stability, attention should be paid to how real program spending per capita evolves, for fiscal consolidation purchased at the price of deep cuts in real program spending per capita may work for a limited period only.

In practice, a fixed threshold value or zone of values for the debt ratio may be picked that would ensure some fiscal prudence, but by the standards of the past, not the uncertain circumstances of the future. Such limitation still leaves a useful role to play for the debt ratio as an indicator of potential risk to fiscal stability, and hence of potential need for preemptive fiscal adjustment. Moreover, not only the level but also the direction of the debt ratio matters: a high debt ratio, if projected to decline sustainably, raises much less concern than if projected to rise even more.

A high and rising interest cost-to-revenue ratio may also raise concerns about fiscal stability. A rising interest cost ratio feeds into a higher debt ratio because interest costs need to be financed at least partly by additional debt. In a context of persistently high interest rates and elevated debt ratio, interest costs may come to absorb such a high proportion of

1. Orszag, P., R.E. Rubin and J.E. Stiglitz, *Fiscal Resiliency in a Deeply Uncertain World: The Role of Semiautonomous Discretion,* Peterson Institute for International Economics, Policy Brief 21.2, January 2021, p.11.

revenues as to ultimately compel the government to constrain program spending and/or raise taxes even if the primary budget balance is in surplus. This is what happened in Canada in the mid-1990's when fiscal adjustment was required not only to reduce the debt ratio but also eventually to create more room for program spending out of current revenues.

Conversely, a lower interest cost ratio leaves governments with more room to incur primary deficits and debt. Indeed, with the prolonged period of low interest rates following the financial crisis came the realization that governments have more room than before to incur higher debt-to-GDP ratios without compromising fiscal sustainability, since interest costs had fallen relative to fiscal revenues. The high sensitivity of the interest cost ratio to interest rates makes it particularly useful as a complement to the debt ratio when interest rates move persistently.

As with the debt ratio, establishing a threshold value for the interest cost ratio beyond which risks to fiscal stability increase significantly is a very risky business. Ten percent has been established as an appropriate upper limit for a sustainable interest cost-to-revenue ratio for the federal government, what later in this report we term the 10% rule.[2] The actual ratio has averaged about 7.5% since 2012-13 compared to 13.5% from 2003-04 to 2012-13 when market interest rates were considerably higher. The selection of 10% going forward is no doubt arbitrary but it allows for prudence in assessing fiscal sustainability.

2. David Dodge, *Two Mountains to Climb : Canada's Twin Deficits and How to Scale Them,* Public Policy Forum, September 2020.

The Base Scenario (#1)

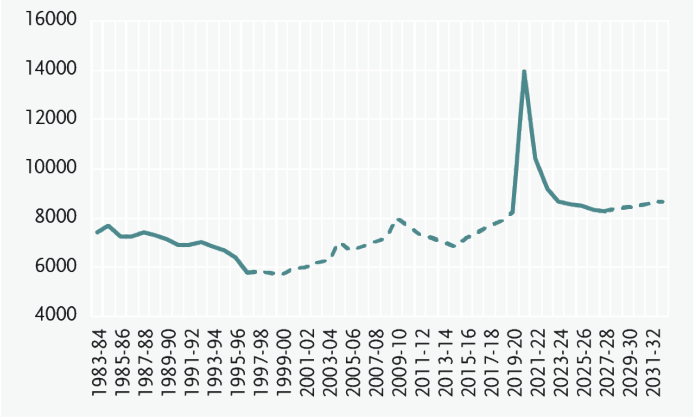
Underlying the base scenario are key macroeconomic and fiscal assumptions:

- The 10-year Canada bond rate averages 2.8% in 2022 and 3.1% in 2023 and is at or slightly lower than 3% until 2032.
- Real GDP growth moves from 3.2% in 2022 to 0.7% in 2023 and 1.9% in 2024, accelerates to about 2% in both 2025 and 2026 before settling on its assumed longer-term potential rate of 1.8% until 2032-33.
- GDP deflator inflation falls from 8.3% in 2022 to 1.9% in 2023 and 2024 and stays at about 2% until 2032. As a result, nominal GDP growth falls from 11.8% in 2022 to 2.6% in 2023 and 3.8% in 2024 before rebounding to about 4% in both 2025 and 2026 and then settling at 3.8% until 2032.
- The ratios of revenues to nominal GDP are assumed to be the same as in FES 2022 over the budget horizon, rising from 16.0% in 2022-23 to 16.2% in 2023-24 and staying there until 2027-28. The ratio is assumed to remain at that level until 2032-33, implying revenue growth at 3.8% per year in the last five years of the projection.
- Program spending is assumed to be the same as in FES 2022 until 2027-28. Thereafter program spending is assumed to increase at a 4% pace until 2032-33. This pace from 2028-29 onwards sets real program spending per capita on a trend growth rate of 0.9% per year over the last five years of the scenario, compared with the 1.5% growth rate that prevailed from 1996-97 to 2019-20. (see Chart 1.1).

Chart 1.1:

BASE SCENARIO: REAL PROGRAM SPENDING PER CAPITA

(Chained 2012 dollars)



The result of these macroeconomic and fiscal assumptions is a steady decline in the net debt-to-GDP ratio from 46% in 2022-23 to 35.1% in 2032-33, a modest level by historical standards. The accumulated deficit-to-GDP ratio exhibits a similar profile.

Chart 1.2:

NET DEBT-TO-GDP RATIO (%):

BASE SCENARIO

The decline in the debt ratio reflects a combination of factors. From 2021-22 to 2027-28 it stems from a substantial strengthening of the primary balance relative to GDP, reflecting a sharp compression of program spending relative to GDP. This more than offset a rapid increase in interest costs due to a near doubling of the effective interest rate on debt,[3] which in turn reflects the escalation of market interest rates that occurs until 2023-24.

It is worth noting that from its peak in 2020-21 real program spending per capita drops every year until it reaches a trough in 2027-28, which is at about the same level as in 2019-20 when it was inflated by the incipient effect of the pandemic. This trough in 2027-28 still represents the level that would be obtained if real program spending per capita was increasing by 0.6% each year after 2018-19. From 2028-29 to 2032-33 the decline in the debt ratio

Table 1.1:

FEDERAL BUDGET BALANCE: BASE SCENARIO

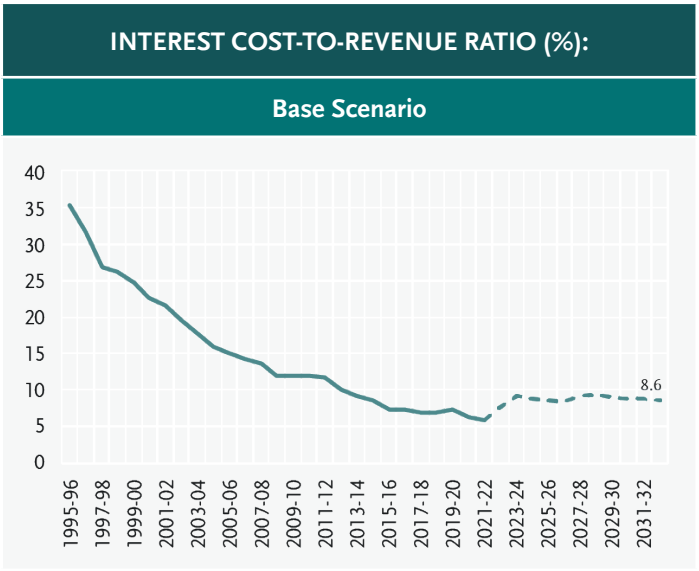
	Revenues %	GDP %	Revenues/ GDP	Program spending %	Real program spending per capita	Primary surplus/ GDP %	Interest cost	Total deficit	Accumu. deficit/ GDP %	Net debt/ GDP %	Interest cost/ revenues %	10-year rate %	Effective rate on debt %
2018-19	6.7	4.4	0.149	4.7	7876	0.42	23,266	-13,964	**30.7**	**34.5**	**7.0**	2.3	2.3
2019-20	0.6	3.4	0.145	8.1	8236	-0.65	24,447	-39,392	**31.2**	**35.2**	**7.3**	1.6	2.3
2020-21	-5.3	-4.5	0.143	78.7	13948	-13.93	20,358	-327,729	**47.5**	**52.1**	**6.4**	0.8	1.6
2021-22	30.6	13.0	0.166	-23.2	10410	-2.64	24,500	-90,200	**45.7**	**49.9**	**5.9**	1.4	1.6
2022-23	7.9	11.8	0.160	-6.6	9152	-0.06	34,700	-36,400	**42.2**	**46.0**	**7.8**	2.8	2.1
2023-24	3.7	2.6	0.162	0.5	8673	0.44	43,300	-30,600	**42.2**	**46.0**	**9.4**	3.1	2.6
2024-25	3.7	3.7	0.162	2.8	8572	0.58	41,968	-24,768	**41.5**	**45.3**	**8.8**	2.8	2.5
2025-26	4.5	4.2	0.162	2.2	8472	0.92	43,205	-14,805	**40.3**	**44.2**	**8.6**	2.8	2.5
2026-27	3.8	4.0	0.162	1.5	8330	1.25	43,910	-3,710	**38.9**	**42.7**	**8.4**	2.9	2.5
2027-28	4.2	3.9	0.162	2.8	8298	1.46	50,105	-1,326	**37.5**	**41.2**	**9.2**	2.9	2.8
2028-29	3.8	3.8	0.162	4.1	8372	1.42	52,903	-3,750	**36.2**	**39.9**	**9.4**	3.0	2.9
2029-30	3.8	3.8	0.162	4.1	8448	1.38	53,052	-3,344	**35.0**	**38.6**	**9.1**	3.0	2.9
2030-31	3.8	3.8	0.162	4.0	8524	1.35	54,118	-3,646	**33.8**	**37.4**	**8.9**	3.0	3.0
2031-32	3.8	3.8	0.162	4.0	8600	1.33	55,208	-3,737	**32.6**	**36.2**	**8.8**	3.0	3.0
2032-33	3.8	3.8	0.162	3.9	8678	1.31	56,007	-3,278	**31.5**	**35.1**	**8.6**	3.0	3.0

3. The effective interest rate on debt is calculated as the ratio of interest cost on debt in fiscal year t to the average of the **interest-bearing debt** at the end of fiscal years t-1 and t. The five scenarios analyzed in this report project not only the evolution of total deficits, to obtain a measure of accumulated deficit, but also that of net non-financial investment, to obtain a measure of net debt, and of "other" interest-bearing debt, to obtain a measure of interest-bearing debt. The projected values of net non-financial investment and other interest-bearing debt are the same across the five scenarios.

stems from continued primary surpluses and a narrowing of the interest rate-growth differential, which brought a decline in the ratio of interest costs to GDP.

In contrast to the debt ratio, the interest cost-to-revenue ratio experienced an upward shift over the projection horizon as a result of the much higher interest rates.[4] From a trough of 5.9% in 2021-22, the interest cost ratio climbs to 9.4% in 2023-24, recedes in subsequent years before rising again to 9.4% in 2028-29, and then declines to 8.6% by 2032-33. Thus, over the scenario horizon it remains within prudent limits by the 10% rule criteria.

Chart 1.3:



4. Annexe 1 explains the relationship between the interest cost ratio and its three components: the effective rate on debt, the ratio of revenues to GDP and the average debt ratio.

The Increased Spending Scenario (#2)

Starting from the base scenario this increased spending simulation keeps real program spending per capita constant at its 2023-24 level until 2027-28 instead of having it steadily fall over these years as implied by FES 2022. After 2027-28 real program spending per capita grows at the same rates as in the base scenario until 2032-33, i.e., 0.9% per annum. The additional program spending this entails relative to the base scenario adds up to $59 billion by 2027-28 and $182 billion by 2032-33. Interest rates are notionally lifted by 20 basis points beginning in 2024-25 to keep aggregate demand in balance with potential output. Consequently, inflation and nominal GDP remain the same as in the base scenario and so do revenues.

The increased spending in this scenario, both for programs and for debt service, does not prevent the net debt-to-GDP ratio from declining steadily until 2032-33 but it severely limits the extent of its decline. By 2027-28 the debt ratio is at 43.2% and by 2032-33 at 40.7% compared with 46% in 2022-23. By international standards such debt ratios are modest, but by Canadian standards they are no longer low. In fact, they compare to the levels prevailing in the early 2000's. As long as they decline beyond 2023-24, as projected in the scenario, the risk to fiscal stability remains minimal. A string of bad events, however, could set them on the road to dangerous levels, as happened in the early 1990's.

Chart 2.1:

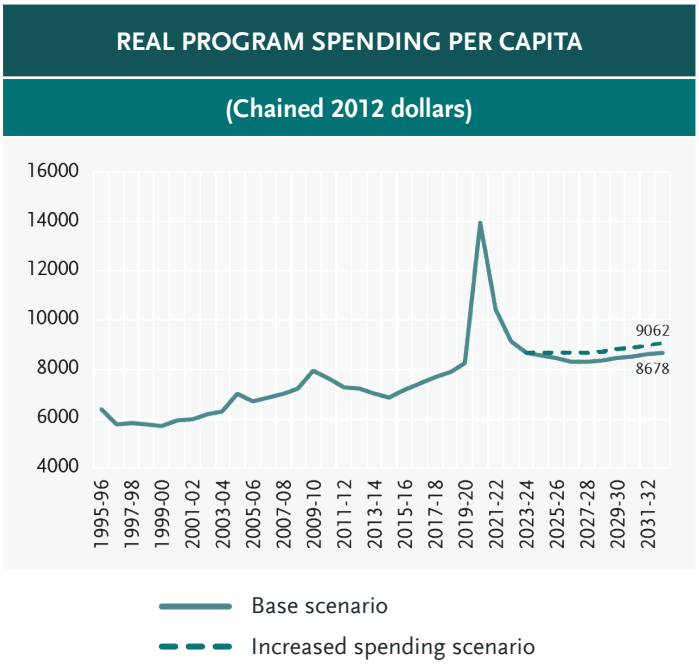


Chart 2.2:

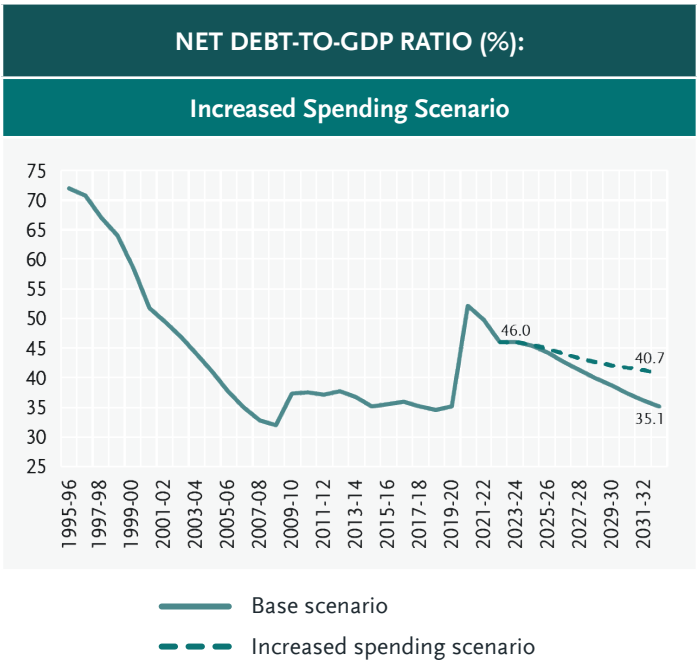


Table 2.1:

FEDERAL BUDGET BALANCE: INCREASED SPENDING SCENARIO													
	Revenues %	GDP %	Revenues/ GDP	Program spending %	Real program spending per capita	Primary surplus/ GDP %	Interest cost	Total deficit	Accumu. deficit/ GDP %	Net debt/ GDP %	Interest cost/ revenues %	10-year rate %	Effective rate on debt %
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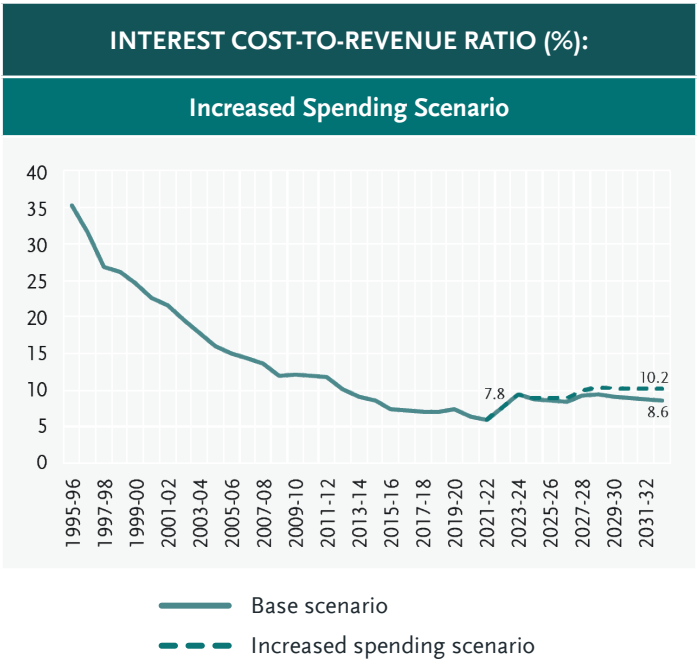
2023-24	3.7	2.6	0.162	0.5	8673	0.44	43,300	-30,600	**42.2**	**46.0**	**9.4**	3.1	2.6
2024-25	3.7	3.7	0.162	4.0	8673	0.40	42,595	-30,837	**41.7**	**45.5**	**8.9**	3.0	2.5
2025-26	4.5	4.2	0.162	3.4	8673	0.56	44,665	-27,445	**40.9**	**44.7**	**8.9**	3.0	2.6
2026-27	3.8	4.0	0.162	3.3	8673	0.64	46,438	-25,988	**40.1**	**43.9**	**8.9**	3.1	2.6
2027-28	4.2	3.9	0.162	3.2	8673	0.79	54,067	-27,600	**39.5**	**43.2**	**10.0**	3.1	2.9
2028-29	3.8	3.8	0.162	4.0	8743	0.76	58,421	-31,980	**38.9**	**42.6**	**10.4**	3.2	3.1
2029-30	3.8	3.8	0.162	4.1	8821	0.72	60,134	-34,060	**38.5**	**42.1**	**10.3**	3.2	3.1
2030-31	3.8	3.8	0.162	4.0	8901	0.69	62,268	-36,378	**38.0**	**41.6**	**10.3**	3.2	3.2
2031-32	3.8	3.8	0.162	4.0	8981	0.67	64,513	-38,600	**37.6**	**41.2**	**10.3**	3.2	3.2
2032-33	3.8	3.8	0.162	3.9	9062	0.65	66,489	-40,321	**37.2**	**40.7**	**10.2**	3.2	3.2

With increased spending, the interest cost-to-revenue ratio rises somewhat more than in the base scenario due to both higher debt ratios and higher effective interest rates on debt. The interest cost ratio remains at or slightly above 10% from 2027-28 onwards. As it is, the interest cost ratio does not entail a risk to fiscal stability—its level is not high enough. Nevertheless, a string of bad events could set it on an upward path if they boost the debt ratio, if they depress the ratio of revenues to GDP, or if they lead to a rise in interest rates.

Chart 2.3:



The Recession Scenario (#3)

The recession scenario assumes that a combination of more persistent supply constraints, more sticky inflation, higher interest rates and a global recession result in a full-blown recession in Canada in 2023, which brings CPI inflation close to target by the end of 2024. The economic assumptions underpinning this case are drawn from the FES 2022 downside scenario. The responses of revenues and spending to the projected recession, however, are assumed to be more severe than in the FES downside scenario.

Here are the key assumptions:

- The 10-year Canada bond rate averages 2.8% in 2022 and 3.2% in 2023, subsequently hovering around that level until 2032.
- Real GDP growth falls to -0.9% in 2023, rebounds to 2.3% in 2024 and 2.7% in 2025 before easing to a longer-term potential rate of 1.8% by 2029 and staying there until 2032-33.
- GDP deflator inflation falls from 7.6% in 2022 to 1.8%% in 2023, and averages 1.9% over the remaining projection horizon. As a result, nominal GDP growth falls from 10.8% in 2022 to 0.9% in 2023, and averages 4.0% subsequently.
- Revenues fall 3% in 2023-24 because of the slump before rebounding to an average growth rate of 6.7% over the three years to 2026-27. After falling to 15.1% in 2023-24 the ratio of revenues to nominal GDP rises to 16.2% by 2026-27. With revenues growing at 4% per year from 2027-28 onwards, as is the case in the base scenario, the revenues-to-GDP ratio remains constant at 16.2% until 2032-33.
- Program spending growth rebounds to 6% in 2023-24 because of the recession and averages -0.3% over the next two years to bring real program spending per capita to the same level as in the base scenario by 2025-26. Program spending increases at the same pace as in the base scenario from 2027-28 onwards.

Instead of steadily falling as in the base scenario, the net debt-to-GDP ratio temporarily increases from 46.7% in 2022-23 to 50.0% by 2024-25 before steadily retreating to 42.4% by 2032-33. The accumulated deficit-to-GDP ratio exhibits the same profile. The marked rise in the debt ratio in 2023-24 and 2024-25 largely stems from substantial primary deficits as the recession hits revenues and expands spending. Also contributing is a rapid increase in interest costs relative to GDP reflecting a rise in the effective interest rate on debt.

Chart 3.1:

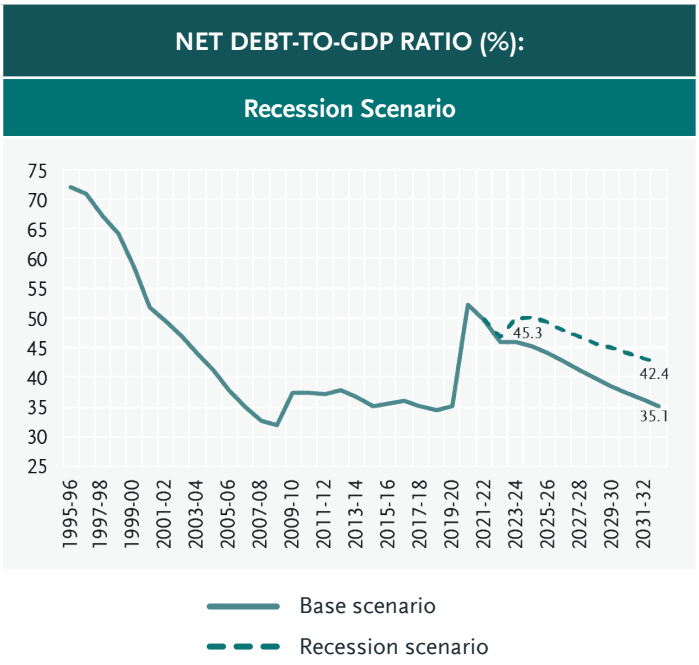


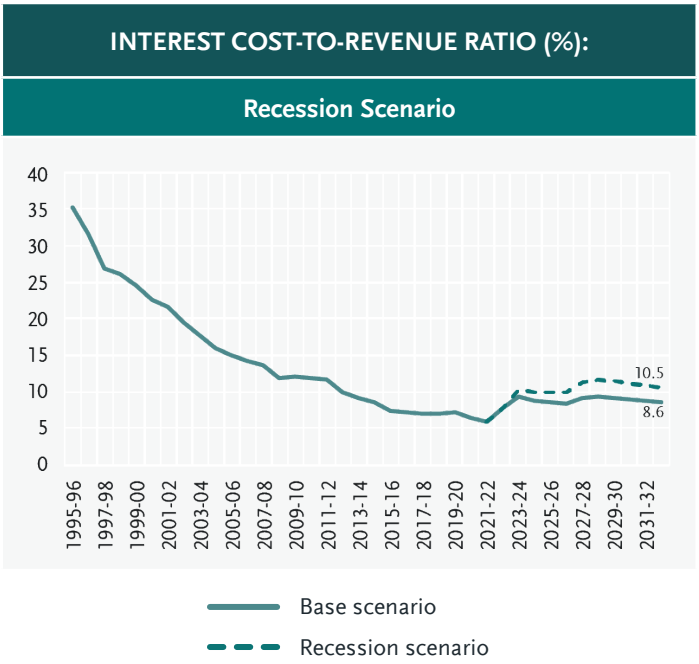
Table 3.1:

FEDERAL BUDGET BALANCE: RECESSION IN 2023													
	Revenues %	GDP %	Revenues/ GDP	Program spending %	Real program spending per capita	Primary surplus/ GDP %	Interest cost	Total deficit	Accumu. deficit/ GDP %	Net debt/ GDP %	Interest cost/ revenues %	10-year rate %	Effective rate on debt %
2018-19	6.7	4.4	0.149	4.7	7876	0.42	23,266	-13,964	**30.7**	**34.5**	**7.0**	2.3	2.3
2019-20	0.6	3.4	0.145	8.1	8236	-0.65	24,447	-39,392	**31.2**	**35.2**	**7.3**	1.6	2.3
2020-21	-5.3	-4.5	0.143	78.7	13948	-13.93	20,358	-327,729	**47.5**	**52.1**	**6.4**	0.8	1.6
2021-22	30.6	13.0	0.166	-23.2	10410	-2.64	24,500	-90,200	**45.7**	**49.9**	**5.9**	1.4	1.6
2022-23	5.2	10.8	0.157	-6.5	9160	-0.47	34,073	-47,158	**42.9**	**46.7**	**7.8**	2.8	2.1
2023-24	-3.0	0.9	0.151	6.0	9157	-1.90	43,978	-97,005	**46.0**	**49.9**	**10.4**	3.2	2.6
2024-25	7.5	4.2	0.156	-2.0	8631	-0.41	45,479	-57,369	**46.1**	**50.0**	**10.0**	3.1	2.6
2025-26	7.1	4.5	0.160	1.5	8472	0.44	48,661	-35,239	**45.3**	**49.2**	**10.0**	3.2	2.6
2026-27	5.5	4.2	0.162	1.5	8330	1.05	51,125	-18,210	**44.1**	**47.9**	**10.0**	3.3	2.7
2027-28	4.0	4.0	0.162	2.8	8298	1.22	59,912	-19,996	**43.0**	**46.7**	**11.2**	3.3	3.1
2028-29	3.9	3.9	0.162	4.1	8372	1.19	64,572	-24,087	**42.1**	**45.8**	**11.7**	3.5	3.3
2029-30	3.8	3.8	0.162	4.1	8448	1.15	65,763	-25,052	**41.2**	**44.9**	**11.4**	3.3	3.3
2030-31	3.8	3.8	0.162	4.0	8524	1.12	66,989	-25,857	**40.4**	**44.1**	**11.2**	3.2	3.3
2031-32	3.8	3.8	0.162	4.0	8600	1.10	67,540	-25,764	**39.6**	**43.2**	**10.9**	3.1	3.2
2032-33	3.8	3.8	0.162	3.9	8678	1.08	67,716	-25,053	**38.8**	**42.4**	**10.5**	3.0	3.2

As in the increased spending scenario, the debt ratios exhibited in the recession scenario are modest by international standards, but by Canadian standards they are no longer low. In fact, they compare to the levels prevailing in the early 2000's. As long as they decline beyond 2024-25, as projected in the scenario, the risk to fiscal stability remains minimal. But nobody can be sure of that. A string of bad events could set them on the road to dangerous levels, as happened in the early 1990's. The higher debt ratios then would boost the interest cost-to-revenue ratio, which in turn would feed into higher debt ratios unless program spending is squeezed or taxes are raised. That would leave the economy very vulnerable to negative shocks because fiscal policy could no longer help as much to support aggregate demand.

The interest cost-to-revenue ratio steadily climbed from a trough of 5.9% in 2021-22 to 11.7% in 2028-29 before gradually declining to 10.5% by 2032-33. The rise in the interest cost ratio up to 2028-29 largely comes from a steady increase in the effective interest rate on debt, which in turn stems from considerably higher market interest rates than in the years preceding 2022-23. Also contributing are the increases in the debt ratio in 2023-24 and 2024-25. The modest decline in the interest cost ratio after 2028-29, on the other hand, reflects a decrease in the debt ratio after 2027-28 and a slight decline in the effective interest rate on debt.

Chart 3.2:



The interest cost ratio is in breach of the prudent limit set by the 10% rule over much of the projection horizon. As it is, that does not entail a risk to fiscal stability—its level is not high enough and it is on a downward path after 2028-29. But nobody can be sure of the future.

As with the debt ratio, a string of bad events could set the interest cost ratio on an upward path if they boost the debt ratio, if they depress the ratio of revenues to GDP, and most importantly, if they lead to a rise in interest rates. A rise in the interest cost ratio would feed into higher debt ratios unless program spending is squeezed or taxes are raised, and the higher debt ratio in turn would raise the interest cost ratio, all the more so if risk premia on borrowing rates increase. Starting from levels already exceeding 10% of revenues, escalating interest costs could crowd out real program spending per capita in a period when the demand for government services is expected to grow significantly. Higher interest cost ratios could also leave the economy more vulnerable to negative demand shocks if they leave fiscal policy with less room to support aggregate demand.

The Lower Supply Scenario (#4)

This scenario is more speculative than the preceding scenarios. Its purpose is to illustrate what might be the impact of supply constraints if they became a permanent feature of the world economy. Persistently higher real interest rates would be required to dampen demand to levels consistent with permanently reduced supply if inflation is to be kept on target. Thus, in this scenario inflation remains the same as in the base case, but interest rates are **permanently** higher and real GDP growth **temporarily** lower. This scenario highlights the high sensitivity of the interest cost ratio compared with the debt ratio with respect to interest rate movements.

Here are key assumptions:

- Growth in global and Canadian supply is constrained over 2024-25 to 2027-28, with no catch-up in subsequent years. In consequence, the level of supply for Canada is assumed to be permanently reduced by 1.8% by 2027-28 relative to the base scenario. This 1.8% assumption is arbitrary but not implausible.
- Inflation remains the same as in the base scenario over the whole projection horizon, but this requires that aggregate demand falls in line with a supply reduced by 1.8% by 2027-28 and that inflation expectations remain anchored by the target.
- Permanently reducing real GDP by 1.8% by 2027-28 only using domestic interest rates for that purpose may require a permanent 80-100 basis point lift in real interest rates. However, less lift of domestic interest rates would be required if Canada's trading partners were also reducing their real GDP (relative to control) to keep inflation on target, as this would depress Canadian real GDP through lower real exports. This additional channel is to be expected if supply restrictions are not confined to Canada but are global, as is assumed here. On that basis, **we assume that only two thirds of the needed 1.8% reduction in real GDP would be achieved through lifting domestic interest rates, implying that these rates would need to be lifted by some 70 basis points.**
- On the assumption of no change in the yield curve relative to the base scenario, the 10-year Canada bond rate in the base scenario is lifted by 0.3 percentage points in 2024-25 and 0.7 percentage points starting in 2025-26: from 2029-30 onwards it is at 3.7% compared with 3% in the base scenario.
- At the end of the day, real GDP growth averages 1.5% from 2024-25 to 2027-28 compared to 2.0% in the base scenario. Over the same period nominal GDP growth averages 3.5% compared to 4.0% in the base scenario.
- Both the ratio of revenues to GDP and real program spending per capita remain the same as in the base scenario.

The result of these macroeconomic and fiscal assumptions is a steady decline in the net debt-to-GDP ratio from 46% in 2023-24 to 39.8% in 2032-33. The average debt ratio over this period is 42.9%, higher than the 40.6% average in the base scenario but not yet raising concern about future fiscal stability. Moreover, the debt ratio is on a downward track over the next decade, which reduces the level of risk as time goes by. The decline in the debt ratio is quite slow, however, as the primary surplus remains modest relative to GDP and as the effective interest rate on debt increases relative to nominal GDP growth after 2025-26.

Chart 4.1:

NET DEBT-TO-GDP RATIO (%):

Lower Supply Scenario

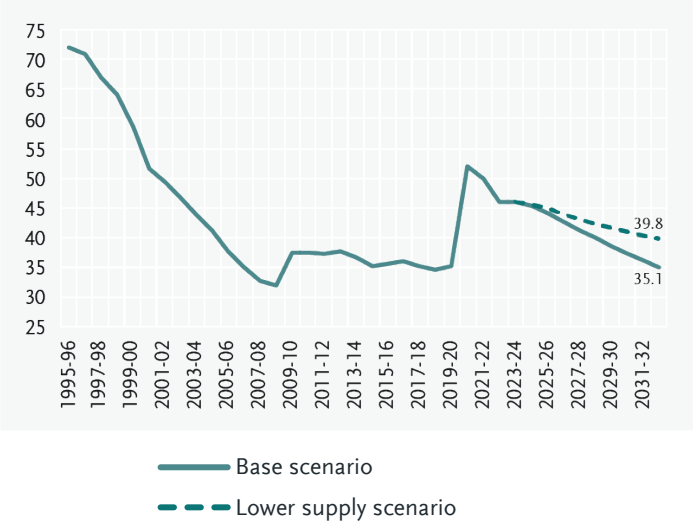


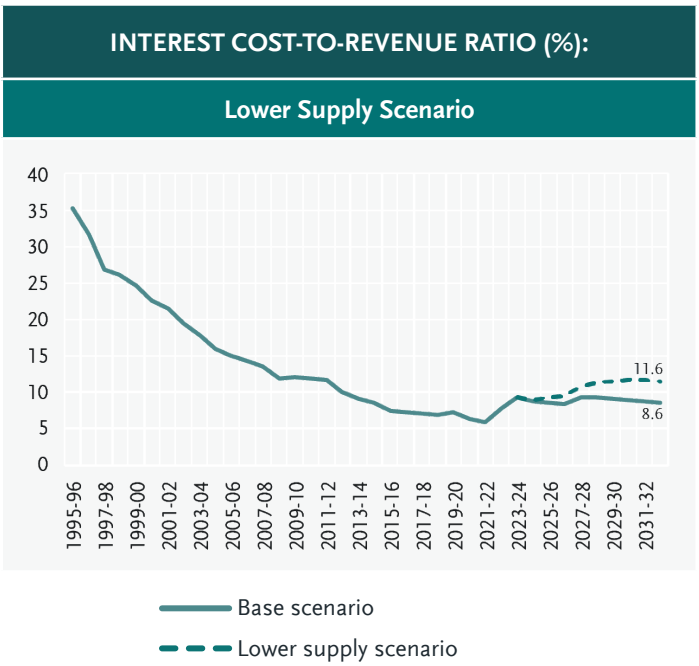
Table 4.1:

FEDERAL BUDGET BALANCE: LOWER SUPPLY SCENARIO

	Revenues %	GDP %	Revenues/ GDP	Program spending %	Real program spending per capita	Primary surplus/ GDP %	Interest cost	Total deficit	Accumu. deficit/ GDP %	Net debt/ GDP %	Interest cost/ revenues %	10-year rate %	Effective rate on debt %
2018-19	6.7	4.4	0.149	4.7	7876	0.42	23,266	-13,964	**30.7**	**34.5**	**7.0**	2.3	2.3
2019-20	0.6	3.4	0.145	8.1	8236	-0.65	24,447	-39,392	**31.2**	**35.2**	**7.3**	1.6	2.3
2020-21	-5.3	-4.5	0.143	78.7	13948	-13.93	20,358	-327,729	**47.5**	**52.1**	**6.4**	0.8	1.6
2021-22	30.6	13.0	0.166	-23.2	10410	-2.64	24,500	-90,200	**45.7**	**49.9**	**5.9**	1.4	1.6
2022-23	7.9	11.8	0.160	-6.6	9152	-0.06	34,700	-36,400	**42.2**	**46.0**	**7.8**	2.8	2.1
2023-24	3.7	2.6	0.162	0.5	8673	0.44	43,300	-30,600	**42.2**	**46.0**	**9.4**	3.1	2.6
2024-25	3.3	3.3	0.162	2.8	8572	0.52	42,832	-27,480	**41.8**	**45.6**	**9.0**	3.1	2.6
2025-26	4.0	3.7	0.162	2.2	8472	0.78	46,242	-22,167	**41.0**	**44.9**	**9.3**	3.5	2.7
2026-27	3.3	3.5	0.162	1.5	8330	1.03	49,047	-15,813	**40.1**	**43.9**	**9.6**	3.5	2.8
2027-28	3.8	3.5	0.162	2.8	8298	1.18	57,616	-18,157	**39.3**	**43.1**	**10.8**	3.5	3.2
2028-29	3.8	3.8	0.162	4.1	8372	1.14	63,284	-23,806	**38.6**	**42.3**	**11.4**	3.6	3.4
2029-30	3.8	3.8	0.162	4.1	8448	1.10	66,443	-26,778	**37.9**	**41.6**	**11.6**	3.7	3.5
2030-31	3.8	3.8	0.162	4.0	8524	1.07	69,792	-29,745	**37.3**	**41.0**	**11.7**	3.7	3.6
2031-32	3.8	3.8	0.162	4.0	8600	1.05	72,001	-31,352	**36.8**	**40.4**	**11.6**	3.7	3.7
2032-33	3.8	3.8	0.162	3.9	8678	1.03	74,277	-32,784	**36.2**	**39.8**	**11.6**	3.7	3.7

The interest cost-to-revenue ratio climbed over the budget horizon, from a trough of 5.9% in 2021-22 to 11.7% in 2030-31 before edging down to 11.6% by 2032-33. This rise reflects a steady increase in the effective interest rate on debt, stemming from a considerable rise in market interest rates.

Chart 4.2:



Thus, beyond 2026-27 the interest cost ratio breaches the prudent limit set by the 10% rule, but not by a great deal. Still, a string of bad events could set it on a steeper upward path if they boost the debt ratio, if they depress the ratio of revenues to GDP, and most importantly if they lead to a rise in interest rates. The latter may occur if inflation intensifies at some point because of renewed negative supply shocks for instance. Starting from levels already exceeding 10% of revenues, higher interest costs could start crowding out real program spending per capita and leave less room for fiscal policy to support the economy when negative shocks to aggregate demand occur.

The Recession, Increased Spending and Lower Supply Scenario (#5)

This scenario combines simultaneously the three previous simulations: a recession in 2023, lower supply in the medium term and increased spending all the way through. The first one has a particularly large effect on the debt ratio in the short term, the second one a particularly large effect on the interest cost ratio in the medium term, and the third one a persistent effect on the debt ratio. It is worth noting that in this encompassing scenario real program spending per capita remains roughly constant at its elevated 2024-25 level until 2027-28 instead of steadily falling over these years as in the base scenario. After 2027-28 it grows at the same rates as in the base scenario until 2032-33, i.e., 0.9% per annum. The ratio of revenues to GDP is also the same as in the base scenario but starting in 2026-27.

The debt ratio reaches levels unseen since the very beginning of the 2000's when it was in rapid decline, whereas in this scenario the debt ratio creeps up in the medium term. What keeps it high relative to the base scenario are persistently lower primary surpluses relative to GDP due to lower revenues (because of lower GDP) and higher program spending, and much higher interest rates relative to nominal GDP growth (the interest rate-growth differential), especially after 2026-27.

Chart 5.1:

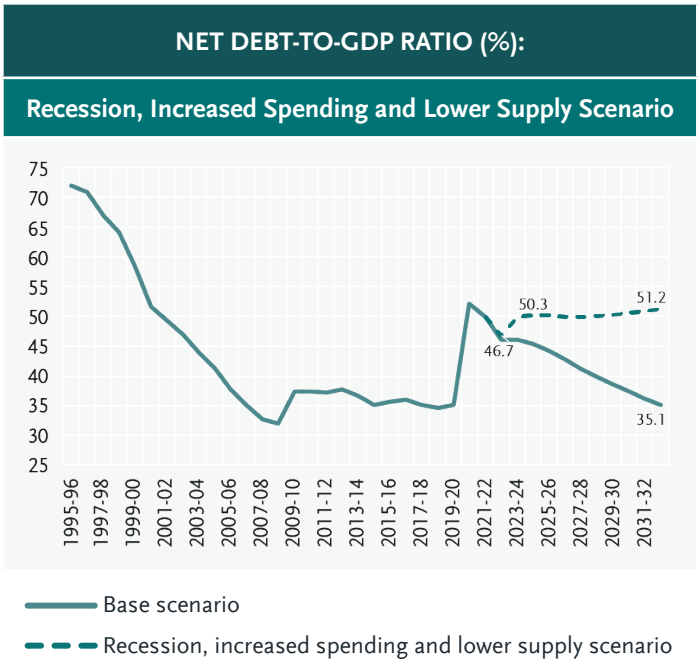


Table 5.1:

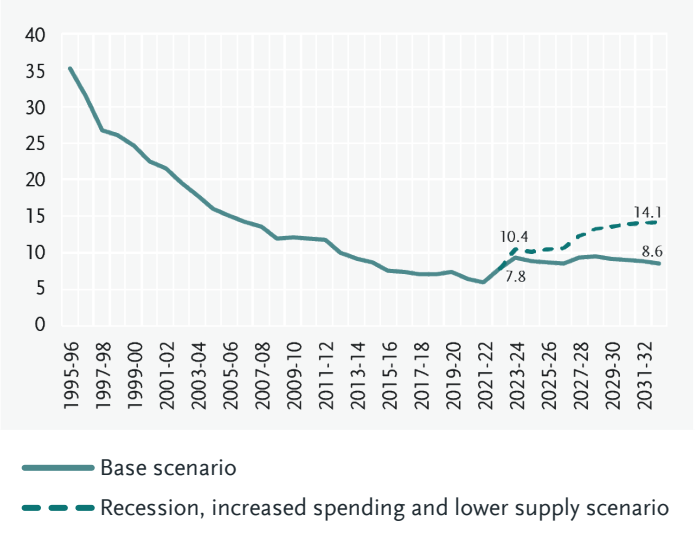
FEDERAL BUDGET BALANCE: RECESSION, INCREASED SPENDING AND LOWER SUPPLY SCENARIO													
	Revenues %	GDP %	Revenues/ GDP	Program spending %	Real program spending per capita	Primary surplus/ GDP %	Interest cost	Total deficit	Accumu. deficit/ GDP %	Net debt/ GDP %	Interest cost/ revenues %	10-year rate %	Effective rate on debt %
2018-19	6.7	4.4	0.149	4.7	7876	0.42	23,266	-13,964	**30.7**	**34.5**	**7.0**	2.3	2.3
2019-20	0.6	3.4	0.145	8.1	8236	-0.65	24,447	-39,392	**31.2**	**35.2**	**7.3**	1.6	2.3
2020-21	-5.3	-4.5	0.143	78.7	13948	-13.93	20,358	-327,729	**47.5**	**52.1**	**6.4**	0.8	1.6
2021-22	30.6	13.0	0.166	-23.2	10410	-2.64	24,500	-90,200	**45.7**	**49.9**	**0.0**	1.4	1.6
2022-23	5.2	10.8	0.157	-6.5	9160	-0.47	34,073	-47,173	**42.9**	**46.7**	**7.8**	2.8	2.1
2023-24	-3.0	0.9	0.151	6.0	9157	-1.90	43,979	-97,005	**46.0**	**49.9**	**10.4**	3.2	2.6
2024-25	7.5	3.8	0.157	-2.0	8631	-0.41	45,778	-57,668	**46.3**	**50.3**	**10.1**	3.2	2.6
2025-26	6.2	4.0	0.160	3.5	8639	0.00	50,101	-50,166	**46.2**	**50.1**	**10.4**	3.5	2.7
2026-27	5.1	3.8	0.162	3.5	8659	0.24	54,168	-46,543	**46.0**	**49.9**	**10.7**	3.6	2.8
2027-28	3.8	3.8	0.162	3.5	8682	0.29	64,807	-55,397	**46.0**	**49.9**	**12.3**	3.6	3.2
2028-29	3.8	3.8	0.162	4.0	8761	0.26	72,294	-63,558	**46.2**	**50.0**	**13.3**	3.7	3.5
2029-30	3.8	3.8	0.162	4.0	8839	0.23	76,807	-68,812	**46.5**	**50.3**	**13.6**	3.7	3.6
2030-31	3.8	3.8	0.162	4.0	8919	0.20	81,658	-74,476	**46.9**	**50.6**	**13.9**	3.7	3.7
2031-32	3.8	3.8	0.162	4.0	8999	0.17	85,693	-79,398	**47.3**	**50.9**	**14.0**	3.7	3.7
2032-33	3.8	3.8	0.162	3.9	9080	0.15	89,484	-83,554	**47.6**	**51.2**	**14.1**	3.7	3.7

The interest cost-to-revenue ratio climbs from 7.8% in 2022-23 to 14.1% in 2032-33, a level last seen in 2006-07 when effective interest rates were considerably higher but the debt ratio substantially lower. This escalation largely reflects a considerable rise in the effective interest rate on debt from 2.1% in 2022-23 to 3.7% by 2030-31 and, to a much lesser extent, a gradual increase in the debt ratio from 46.7% in 2022-23 to 51.2% by 2032-33.

Chart 5.2:

INTEREST COST-TO-REVENUE RATIO (%):

Recession, Increased Spending and Lower Supply Scenario



This scenario combining recession, increased spending and lower supply entails a considerable risk that financial markets come to question the persistence of a high debt ratio after 2024-25. The steady rise in the interest cost ratio beyond 10% after 2022-23 would contribute to this risk because it would force the government to borrow more to pay for its program spending. If financial markets were to increase the risk premium on borrowing rates, the interest cost ratio would climb more and feed into higher debt ratios. Pressures on the government to raise tax rates or reduce program spending would intensify greatly. A reduction in program spending per capita in a period when the demand for public services is high could not be sustained for long.

Summary and Conclusion

In Budget 2022 and the November economic statement the government laid out a fiscal plan against a plausible but optimistic set of assumptions about the economic and interest rate context in which it would be operating through 2027. In our base scenario we incorporate these assumptions and extend the fiscal plan through to 2032. In this base scenario, as shown in the first two columns in the Table 6, both the net debt/GDP ratio and the interest cost/revenue ratios stay within reasonable bounds each year going forward.

Thus, if the assumptions turn out to be a reasonable representation of future economic and interest rate conditions and if the federal government were to limit spending and borrowing to levels set out in the FES 2022, it appears that the federal government would be able to access capital markets without paying any risk premium, although at interest rates higher than in the pre-COVID period. Planned borrowing would clearly be at sustainable levels. But there are risks to this scenario.

First, we think that there is a high risk that the government will not be able to deliver the services it promised Canadians in Budget 2022 and the FES 2022 with the program spending amounts proposed in FES 2022. We have modeled in scenario #2 the levels of nominal program spending required to maintain real program spending per capita at 2023-24 level until 2027-28. This implies some $60 billion of additional program spending relative to FES 2022. If anything, even more spending and borrowing may be required for the government to deliver on the policy objectives set out in Budget 2022. What we have modelled in this scenario, however, appears to us more realistic than set out in the FES 2022.

Table 6.1:

DEBT-TO-GDP RATIO (ND/GDP) AND INTEREST COST-TO-REVENUE RATIO (IC/R) UNDER 5 FEDERAL BUDGET SCENARIOS

	Base (#1)		Increased Spending (#2)		Recession in 2023 (#3)		Lower Supply (#4)		Incr. Spending, Recession and Lower Supply (#5)	
	ND/GDP	IC/R	ND/GDP	IC/R	ND/GDP	IC/R	ND/GDP	IC/R	ND/GDP	IC/R
2022-23	46.0	7.8	46.0	7.8	46.7	7.8	46.0	7.8	46.7	7.8
2023-24	46.0	9.4	46.0	9.4	49.9	10.4	46.0	9.4	49.9	10.4
2024-25	45.3	8.8	45.5	8.9	50.0	10.0	45.6	9.0	50.3	10.1
2025-26	44.2	8.6	44.7	8.9	49.2	10.0	44.9	9.3	50.1	10.4
2026-27	42.7	8.4	43.9	8.9	47.9	10.0	43.9	9.6	49.9	10.7
2027-28	41.2	9.2	43.2	10.0	46.7	11.2	43.1	10.8	49.9	12.3
2032-33	35.1	8.6	40.7	10.2	42.4	10.5	39.8	11.6	51.2	14.1

The second two columns in Table 6 indicate that with the "increased spending" scenario both the debt ratio and the interest cost ratios deteriorate somewhat relative to the base scenario in each year to 2032, but only moderately. We emphasize that our way of measuring the extent of additional spending (or tax credits) required to implement the government's promises as set out in Budget 2022 and FES 2022, while plausible, is still likely to underestimate the spending and borrowing that will actually be required to implement the government's policy objectives, including transfers to the provinces (especially for health care) income support and employment insurance, enhanced national security and defence, improved infrastructure, and transformation to a low-carbon economy.

Second, there is a risk that it will not be possible to get a rather sticky inflation rate down to 2% by the end of 2024 without higher policy interest rates in 2023 and hence a deeper recession that year, and this not only in Canada but also in major advanced economies. In scenario #3 we explore the impact that a deeper recession in 2023 (assuming somewhat higher program spending or income support and lower revenues) and persistently higher market interest rates would have on our fiscal ratios (columns 5 and 6 in Table 6). We think the chance that this risk will emerge fully as we have modelled is real although not overwhelming. But assuming a recession emerges as modelled, it is clear that the net debt/GDP ratio worsens starting right away in 2023 and that the interest cost/revenue ratio is at or marginally above the 10% threshold throughout the whole period. In other words, the risk of sticky inflation in 2023 and 2024 implies a serious deterioration in both ratios relative to the base scenario. Taken in isolation this would raise the prospect of a deterioration in access to capital markets and possibly a small increase in risk premium on Canada's debt. However, the other advanced economies would face similar, or perhaps even worse prospects, and this could attenuate the negative impact of higher fiscal ratios on the attractiveness of Canada's debt.

Third, there is a risk that supply constraints become a permanent feature of the world and Canadian economies, implying higher interest rates on an ongoing basis. This would lead to temporary lower real and nominal economic growth from 2024 to 2027 and hence lower revenues assuming that the ratio of revenues/GDP remains the same as in the base scenario. This risk of structurally higher interest rates would imply a somewhat worsened debt/GDP ratio in most years relative to the base scenario and a substantially worse interest cost/revenue ratio near the end of the 2020's and the early 2030's (see columns 7 and 8 in Table 6)

Finally, we note that not one of these three risks to the base scenario is likely to occur alone without at least one or both of the other risks emerging concurrently. For that reason, in our fifth scenario, we calculate the combined impact of a full-fledged recession in 2023, permanently increased real program spending, and lower supply and higher interest rates going into the medium term (see columns 9 & 10 in Table 6). It is clear that were these risks to emerge fully, the debt/GDP ratio would remain near 50% throughout the whole period and the interest cost/revenue ratio would steadily rise well above 10% especially beyond 2026-27. Were this to be the case, continued federal government access to capital markets on current favourable terms would be seriously threatened and the 10-year rate on Canada bonds could well be even higher than the 3.7% toward the end of the 2020's that is shown in Table 5. Moreover, the knock-on effect of higher rates and fiscal deterioration could permanently impair the private (and public) investments to secure the 1.8 % potential real growth we assumed in our analysis.

Implications

The implication of our analysis of the federal 2022 budget as updated in the Fall Economic Statement is that there is a significant risk that both the debt ratio and the interest cost ratios exceed comfortable levels over the remainder of this decade, both because economic conditions will turn out to be more difficult than assumed in the FES 2022 and because the spending budgeted will turn out to be insufficient to achieve the policy goals promised.

ANNEXE 1:

The Debt Ratio and the Interest Cost Ratio and their Drivers: 1977 to 2020

A number of fiscal gauges help evaluating the degree of risk to public finance stability. The most widespread fiscal gauge for advanced economies is the debt-to-GDP ratio. With the prolonged period of low interest rates following the financial crisis, however, came the realization that, as long as interest rates remain low, governments have more room than before to incur higher debt-to-GDP ratios without compromising fiscal sustainability. Indeed, the relatively low interest rates did allow the interest costs of the debt to fall relative to fiscal revenues. For this reason, the interest cost-to-revenue ratio has drawn increased attention as a complementary fiscal anchor in recent years. For Canada, David Dodge has proposed a 10% threshold for this ratio as a prudent rule for guiding federal fiscal policy.[5]

This note goes over the drivers of the debt-to-GDP ratio and the interest cost-to-revenue ratio to illuminate the role of interest rates, economic growth and fiscal adjustment in driving debt dynamics and its servicing.

Drivers of Changes in the Debt-to-GDP Ratio

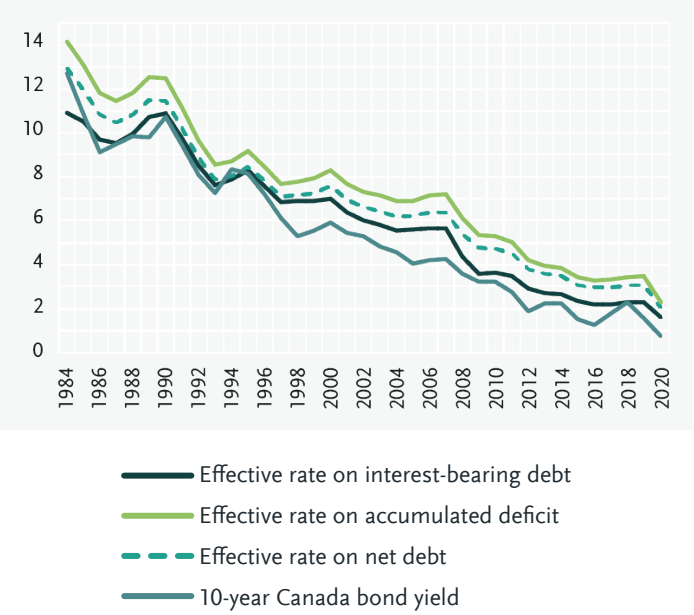
Common measures of the federal debt comprise accumulated deficit, net debt, total gross debt, and interest-bearing debt. The **accumulated deficit** measure proceeds from the accumulation of the primary budget balance and the net interest cost of debt, which together amount to the total deficit. To the accumulated deficit, the **net debt** measure adds the cumulative value of net non-financial investment. To the net debt, the **total gross debt** measure adds financial assets (cash, reserve, loans): this is the most inclusive measure of debt. From the gross debt, the **interest-bearing debt** measure subtracts accounts payable and accrued liabilities. Market debt accounts for three quarters of the interest-bearing debt, public sector pensions and other future benefits for another 20% or so.

The measure of interest cost of debt included in the budget balance applies to all items of debt that bear interest, including the debt that financed the acquisition of financial and non-financial assets. It is thus more consistent with the interest-bearing debt measure than with the net debt measure, which excludes financial assets, or the accumulated deficit measure, which excludes both financial and non-financial assets. As a result, **the effective interest rate on the interest-bearing debt, calculated as the ratio of interest costs in period t to the average of the interest-bearing debt at the end of periods t-1 and t**, is much closer to market interest rates than those based on net debt or the accumulated deficit.

5. David Dodge, T*wo Mountains to Climb : Canada's Twin Deficits and How to Scale Them,* Public Policy Forum, September 2020.

Chart 1:

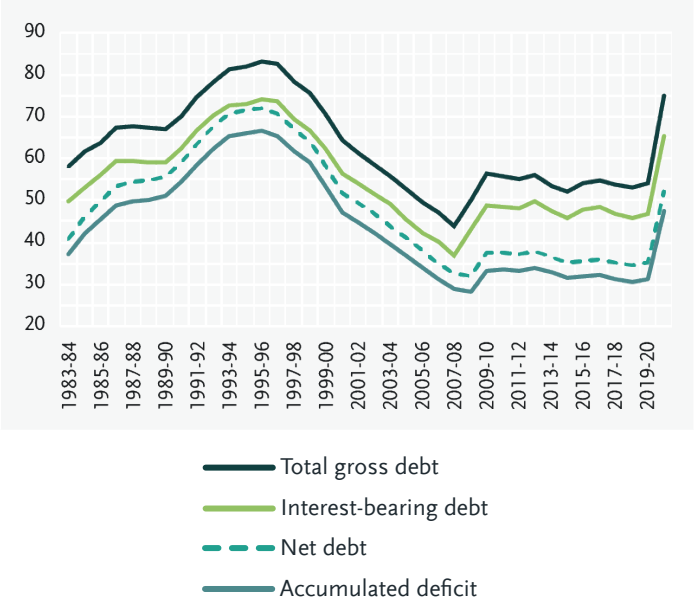
COMPARISON OF INTEREST RATES ON DEBT (%)



Based on data from Finance Canada, Fiscal Reference Tables.

Chart 2:

FOUR MEASURES OF FEDERAL DEBT RATIO TO GDP (%)



Source: Finance Canada, Fiscal Reference Tables, and Statistics Canada table 36-10-0104-01.

In the interest of consistency between market interest rates and effective interest rates on debt, the analysis of debt dynamics and its sources below relies on the interest-bearing debt measure. The conclusions reached about the drivers of changes in the debt ratio over time would be the same if net debt or the accumulated deficit measures were used instead. The resulting effective interest rates on debt would be higher and the interest cost-to-growth differentials more positive, but their profiles would be very similar to those based on the interest-bearing debt measure. The fact is that all the measures of debt ratio have essentially the same profile over time, except in 2008-09 when extraordinary measures to buttress the financial system bumped up the interest-bearing debt ratio (and gross debt ratio) relative to the net debt ratio and the accumulated deficit ratio.

Changes in the ratio of interest-bearing debt to GDP proceed from the debt accumulation equation:[6]

$$d_t - d_{t-1} = \left(\frac{i_t - g_t}{1+g_t}\right) * d_{t-1} + (pb_t + k_t) + \left(\frac{i_t * (D_t - D_{t-1})}{Y_t}\right) + sfa_t$$

where d_t represents the debt-to-GDP ratio at time t, i_t the effective interest rate on the debt; g_t the growth rate of nominal GDP; pb_t the ratio of primary budget balance to GDP; k_t net non-financial investments as a share of GDP; D_t, the debt level at the end of period t; Y_t, nominal GDP; and sfa_t, a residual term (expressed as a share of GDP) that comprise elements that contribute to changes in interest-bearing debt but are missing from the rest of the equation.

6. For a good guide on public debt dynamics, see Escolano, Julio, "A Practical Guide to Public Debt Dynamics, Fiscal Sustainability, and Cyclical Adjustment of Budgetary Aggregates," IMF Technical Notes and Manuals, January 2010.

A few measurement issues are worth noting. i_t, the effective interest rate on the debt, is defined as the ratio of interest costs to interest-bearing debt. The primary budget balance is the total operating balance excluding the interest cost of debt. Net non-financial investments are not part of the primary balance and, by definition, exclude amortization costs of non-financial assets, which are already included in operating expenditures and hence accounted for in the primary balance. Thus, the term $(pb_t + k_t)$ above incorporates **gross** capital investment as an element contributing to new borrowings and hence to changes in debt ratio.

The first term in the equation above, $\left(\frac{i_t - g_t}{1 + g_t}\right) * d_{t-1}$ captures endogenous debt dynamics. It shows that debt, as a share of GDP, will increase with the interest rate, i_t, since additional debt service will have to be financed with additional debt issuance, assuming that nothing else is done, and that it will fall with nominal GDP growth, g_t, which in turn reflects both real growth and the rate of inflation in the economy. Thus, it implies that if the effective interest rate on debt persistently exceeds the growth rate of nominal GDP, i.e., if $(i_t - g_t) > 0$, the debt ratio will tend to increase and all the more so that the initial debt ratio, d_{t-1}, is higher. A primary surplus, $pb < 0$, will be required to stabilize or reduce the debt ratio. Conversely, if the interest rate on debt is persistently lower than nominal GDP growth, i.e., if $(i_t - g_t) < 0$, the debt ratio could fall even in the presence of a primary deficit and positive net capital investments, $(pb_t + k_t) > 0$. For the federal interest-bearing debt, $(i_t - g_t)$ was positive most of the time from 1982 to 2003 and negative most of the time from 2004 to 2019.

The interest rate-to-growth differential, $\left(\frac{i_t - g_t}{1 + g_t}\right)$ responds to factors that affect interest rates, real GDP growth and inflation. This includes cyclical conditions, economic policies and structural factors. Recessions, for instance, usually induce a rapid but temporary increase in the differential whereas a cyclical rebound of activity works in the opposite direction. Unexpectedly high inflation at first tends to reduce the debt ratio by boosting fiscal revenues, the more so the longer the maturity structure of debt. However, if higher inflation leads to an upward revision in long-term inflation expectations such that real interest rates paid by the government become more positive, it will then work toward reversing the initial fall in the interest rate-to-growth differential and raising the debt ratio.

One important factor affecting the differential is monetary policy, through changing the policy rate and its impact on activity and inflation, through quantitative easing or tightening, which reduces or increases market bond rates directly, and through influencing longer-term inflation expectations and hence long-term interest rates. A tightening of monetary policy initially leads to a rise in the debt ratio. However, if this tightening induces a material reduction in inflation expectations, the interest rate-to-growth differential would start shrinking, thereby slowing, if not halting or even reversing, the rise in the debt ratio. A loosening of monetary policy works in the opposite effect.

Structural factors that influence the natural rate of interest or the trend rate of economic growth can have durable effects on the differential. The so-called "global savings glut", for instance, would have worked toward a less positive differential by lowering the natural rate of interest. Population aging would also have contributed to the decline of the natural rate of interest, but at the same time it depressed potential output growth so its net impact on the differential is uncertain.

The second term of the above equation, $(pb_t + k_t)$, captures the impact of fiscal adjustment on debt dynamics. A primary budget surplus relative to GDP, $pb_t < 0$, reduces the debt ratio while positive net non-financial investment relative to GDP, $k_t > 0$, results in an increased debt ratio. The emergence of or increase in a primary surplus relative to GDP may

result from fiscal consolidation measures (spending cuts and/or tax increases) or from a nonlinear response of the tax-transfer system to strong economic conditions. Conversely, the emergence of or increase in a primary deficit relative to GDP may reflect the expansionary response of fiscal authorities to negative shocks to the economy or a non-linear response of the tax-transfer system to weak economic conditions.

The third term of the above equation, $\left(\frac{i_t * (D_t - D_{t-1})}{Y_t}\right)$ represents the dollar cost of current-year borrowings as a share of GDP, which contributes to the change in the debt ratio during the current year but is not captured by the interest rate-to-growth differential term, which is tied to lagged debt.

The fourth term of the above equation, sfa_t, is a residual item in our framework, but in effect comprises non-budgetary transactions other than non-financial asset acquisition that need to be financed by borrowings and thereby contribute to increase debt. In the case of the federal interest-bearing debt, these include borrowings to fund public sector pensions and other accounts. sfa_t may also reflect measurement errors on the other terms of the equation.

Looking back in time, the debt ratio increased moderately from 1977 to 1982 as a result of a primary deficit cumulating to 10.4% of GDP (Table 1 and Chart 3). A negative interest rate-to-growth differential pushed the debt ratio down slightly over the period while current-year borrowing costs, boosted by high interest rates, raised it modestly. It is not possible to evaluate the contributions of net capital investment and hence of the stock-flow adjustment, which is a residual, because data on the stock of non-financial assets are not available before 1983.

Table 1:

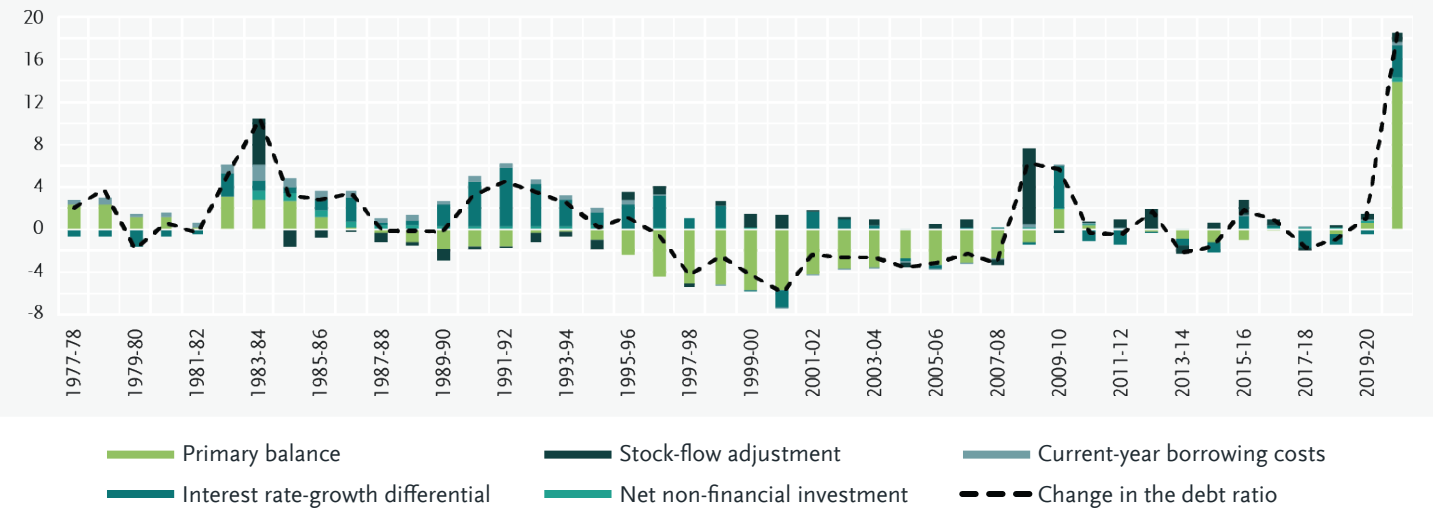
CONTRIBUTIONS TO CHANGES IN THE FEDERAL INTEREST-BEARING DEBT RATIO *(percentage points)*

	Changes in debt ratio	Contributions from:				
		Primary balance	Net capital investment	Interest rate growth diff.	Current year borrowing cost	Stock-flow adjustment
1977-1982	9.5	10.4		-1.7	3.0	
1983-1995	34.6	-3.6	5.7	27.4	7.6	-2.5
1996-2007	-37.2	-49.6	1.3	6.6	-0.1	4.4
2008-2019	10.1	-2.2	1.7	-2.1	0.9	12.7
2020	18.5	13.9	0.4	3.0	0.3	0.9

The escalation of the debt ratio in the decade to the mid-90's mostly arose from large positive interest rate-to-growth differentials in an environment of exceptionally high interest rates. These elevated interest rates combined with large current-year borrowings also contributed significantly to the escalation of the debt ratio. On net, fiscal adjustment played little role as a cumulative primary surplus of 3.6% of GDP largely offset net capital investment amounting to 5.7% of GDP over the period. The stock-flow adjustment factor, which is a residual, made a net negative contribution during this period. We have no explanation for negative contributions from this source over history, except that they likely reflect errors of measurement on the debt and current-year borrowing cost terms.

Chart 3:

SOURCES OF CHANGES IN THE INTEREST-BEARING FEDERAL DEBT RATIO *(percentage points)*



The substantial reduction in the debt ratio that took place from the mid-1990's to just before the financial crisis was driven by fiscal adjustment, as reflected in large primary budget surpluses relative to GDP. Fiscal adjustment also largely accounts for the surge in the debt ratio in 2020. From the mid-90's onwards, net non-financial investment as a share of GDP, which is also part of fiscal adjustment, was very small and had an insignificant effect on the debt ratio. In the mid-90's it fell victim of fiscal consolidation and rapid GDP growth and never recovered except, rather modestly, in 2010-11.

From 2008 to 2019, fiscal adjustment and the interest rate-to-growth differential had little effects on the net debt ratio and the accumulated deficit ratio, which explains the relative stability of these ratios over this period (Chart 2). Small negative differentials, as both interest rates and nominal GDP growth were low, modestly depressed the debt ratio. The interest-bearing debt ratio, however, increased significantly, but this is more than accounted for by the stock-flow adjustment that arose from exceptionally large non-budgetary transactions in 2008-09 when the government spent nearly $100 billion, largely on purchases of insured mortgages, to buttress Canada's financial system when the financial crisis erupted. The additional borrowing this brought permanently lifted the interest-bearing debt ratio by about seven percentage points relative to the net debt ratio and accumulated deficit ratio (see Charts 3 and 2).

The eruption of COVID-19 in early 2020 led to an 18.5 percentage point escalation in the debt ratio in 2020-21, largely reflecting an extraordinary expansion of the primary deficit as program spending exploded to support income and activity while revenues dropped faster than nominal GDP. Also contributing to the surge in debt ratio, but to a much smaller extent than fiscal adjustment, was a widening in the interest rate-to-growth differential arising from a collapse in nominal GDP growth that far exceeded a decline in the effective interest rate on debt.

Drivers of the Interest Cost-to-Revenue Ratio

The ratio of interest costs on debt, I_t, to government revenues, R_t, can be decomposed as follows:

$$\left(\frac{I}{R}\right)_t = i_t * \frac{\left(d_t + \frac{d_{t-1}}{1+g_t}\right)}{2} * \left(\frac{Y}{R}\right)_t$$

where i_t represents the effective interest rate on the debt, d_t represents the debt-to-GDP ratio at the end of time t, g_t the growth rate of nominal GDP at time t, and Y_t, nominal GDP at time t.

Thus, the evolution of $\left(\frac{I}{R}\right)_t$ reflects three factors:

1. The effective interest rate on the debt, i_t. When the effective rate increases, I/R rises and this to an extent that positively depends on the average debt ratios and the GDP-to-government revenues ratio.
2. The average of the debt ratios at the end the current and previous fiscal years, $\frac{\left(d_t + \frac{d_{t-1}}{1+g_t}\right)}{2}$; a rise in the average debt ratio pushes I/R up, and this to an extent that depends positively on the level of the effective interest rate on debt and negatively on how high revenues are relative to GDP.
3. The GDP-to-government revenues ratio, $\left(\frac{Y}{R}\right)_t$; an increase in this ratio tends to raise I/R: in other words, a positive (negative) shock to revenues relative to GDP, such as during a cyclical rebound (slump) of economic activity, tends to restrain (boost) I/R to an extent that depends positively on the levels of the average interest rate on debt and of the lagged debt ratio.

As shown in Table 2, movements in the effective interest rate on debt more than explain the marked increase in I/R from 1977 to 1984, its stability at a high level in the decade until the mid-1990's, and its subsequent drop until 2020-21. The average debt-to-GDP ratio modestly amplified the positive impact of the effective interest rate, especially from 1977-2008 to 1996-97 when the interest rates on the debt were particularly high and the debt ratio was rising. The GDP-to-government revenues ratio, on the other hand, was on a downward trend until the mid-1990's in a context of relatively high inflation. This worked toward reducing I/R. The GDP-to-government revenues ratio subsequently climbed until the financial crisis and remained high until 2020-21, thereby contributing to raise I/R.

Table 2:

CONTRIBUTIONS TO CHANGES IN INTEREST COST-TO-REVENUE RATIO *(percentage points)*

	Change in interest cost ratio	Contributions from:			
		Effective interest rate	Average debt ratio	GDP-to-revenue ratio	Total
1977-1984	21.2	35.4	14.9	-29.0	21.2
1985-1995	0.7	2.0	0.7	-2.1	0.7
1996-2008	-23.3	-42.8	-8.4	27.9	-23.3
2009-2020	-5.5	-8.2	-1.6	4.3	-5.5

It is worth noting that the contribution to $\left(\frac{I}{R}\right)_t$ of the average interest rate on debt can be split into two elements: that of the current market interest rates and that of the degree of adjustment of the effective rate on debt to the market rates. This degree of adjustment would depend on the evolving maturity structure of debt and the amplitude of changes in market rates over time. In practice, the 10-year Canada bond rate has had virtually the same effect on $\left(\frac{I}{R}\right)_t$ as the effective rate over the last 45 years or so, the two measures of interest rates having been fairly close to each other in general (see Chart 1).

Relationships Between the Debt Ratio and the Interest Cost Ratio

The debt ratio and the interest cost ratio are not independent of each other. On the one hand, interest costs need to be financed by additional debt, so a shock to the interest cost ratio $\left(\frac{I_t}{R_t}\right)$ directly affects the debt ratio d_t. The following equation, which is a modified version of the debt accumulation equation shown previously, spells out this relationship:

$$d_t \approx d_{t-1} + \left(\frac{I_t}{R_t} * 2 * \frac{R_t}{Y_t}\right) - i_t * d_t - \left(\frac{g}{1+g}\right)_t * d_{t-1} + (pb_t + k_t) + \left(\frac{i_t * (D_t - D_{t-1})}{Y_t}\right) + sfa_t$$

On the other hand, an exogenous increase in debt, due for instance to an expansion of the primary deficit or an increase in net capital investment, results in a rise in interest costs to an extent that depends on the level of interest rates. Thus, a shock to the debt ratio d_t directly affects the interest cost ratio $\left(\frac{I}{R}\right)_t$. This is implied by the equation that decomposes the interest cost-to-revenue ratio:

$$\left(\frac{I}{R}\right)_t = i_t * \frac{\left(d_t + \frac{d_{t-1}}{1+g_t}\right)}{2} * \left(\frac{Y}{R}\right)_t$$

Empirically, a simple regression shows that the interest cost ratio is fairly tightly related to the contemporaneous 10-year Canada bond rate and the lagged debt ratio (Chart 4).

While both the debt ratio and the interest cost ratio are directly influenced by interest rates, the interest cost ratio is far more sensitive to them than the debt ratio. This is because interest rates directly affect the **level of** the interest cost ratio whereas they have a direct impact only on **the change in** the debt ratio, which amounts to a fraction of the debt ratio itself. Empirically, there is a significant positive correlation between the interest cost ratio and the interest rate-to-growth differential through which the interest rate effect is transmitted to the changes in the debt ratio: they show the same trends since the late 70's (Chart 5).

The high responsiveness of the interest cost ratio to interest rates makes it a useful leading indicator of changes in the debt ratio in periods of sustained changes in market interest rates. A rise in market interest rates feeds into increased interest costs on the debt as it applies to current borrowings associated with financing the budget deficit, net capital investment as well as maturing debt. These higher interest costs in turn feed into a larger budget deficit, more borrowing and a higher debt. The debt ratio increases by a fraction of the increase in the interest cost ratio, assuming little change in the ratio of revenues to GDP.

Chart 4:

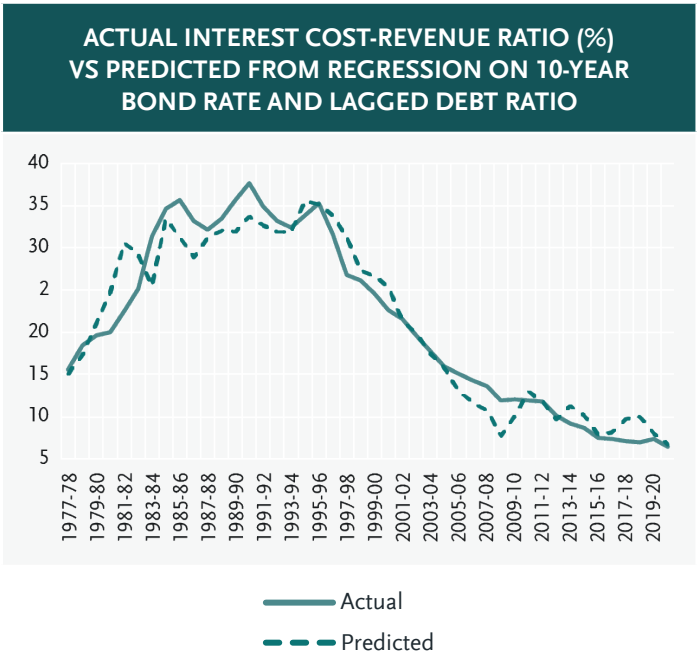
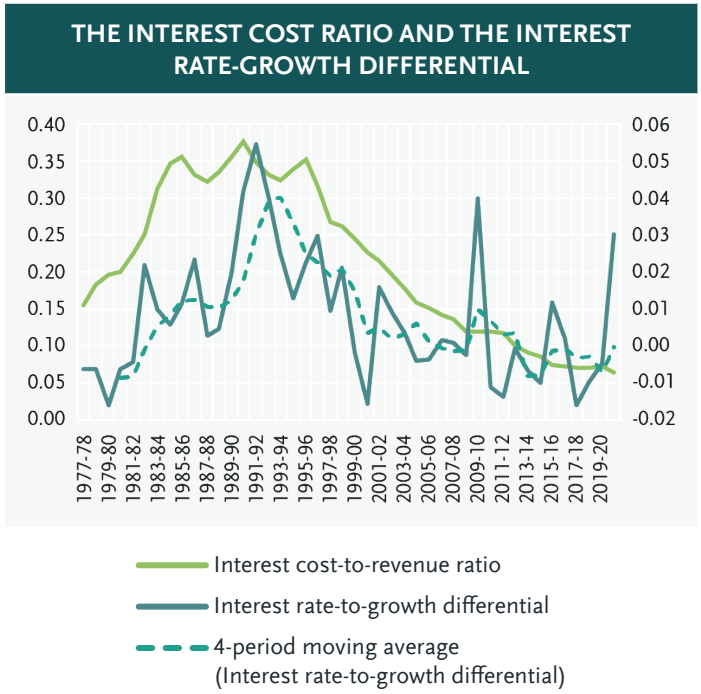


Chart 5:



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Assessing the Potential Risks to the Sustainability of the Government of Canada's Current Fiscal Plan

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