



Intergenerational Dimensions of Canada's Fiscal System

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Abstract

Intergenerational equity has been used as a rationale for debt repayment in Canada. This paper addresses this issue by using economic and fiscal projections that answer the following questions: (a) will future generations experience the same growth of real GDP per capita as was experienced during the past 20 years, (b) will future generations have to bear a higher tax burden in order to afford the same level of public services as current generations, and (c) how will the tax burden of future generations be affected by debt repayment plans consistent with recent announcements by the federal Minister of Finance?

The results show that future generations can expect the same growth of real GDP per capita as was experienced during the past 20 years. They also show that the projected spending pressures over the next 22 years can be financed through a pattern of tax revenues that yields lower aggregate tax rates in the future. The current fiscal structure in Canada, including the public debt and its servicing costs, does indeed have important intergenerational implications, but not as a result of population aging. It is projected to lead to higher aggregate tax rates about 15 years from now, not because of spending pressures from population aging but because the fiscal structure is unbalanced and tends to generate surpluses of increasing amounts over time. We conclude that debt repayment cannot be justified on intergenerational equity grounds and suggest that what is needed is re-balancing of the fiscal structure, not debt repayment.

I. Introduction

Despite a rapid decline in the debt-to-GDP ratio, which has dropped by more than 40 percentage points from its peak level of more than 100 percent in the mid-1990s, what to do with the public debt remains a topical policy issue [Rogers and Watson 2004]. While provincial and territorial governments have no fiscal room for debt repayment (with the exception of Alberta), the federal government has been setting moving targets for the federal debt-to-GDP ratio to be met by small annual debt repayments. The rationale for such debt repayment policy within a fiscal framework that leads automatically to a declining debt-to-GDP ratio is not self-evident and has not been articulated in a convincing manner.

Economists use three major criteria for evaluating debt policies: fiscal sustainability, efficiency, and intergenerational equity. A fiscal system is considered to be sustainable over a certain period of time if the debt-to-GDP ratio at the end of the period is equal to that at the beginning of the period [Blanchard et al. 1990, Auerbach 1994]. The combined fiscal system of the federal and provincial/territorial governments exceeds the sustainability test because it is projected to generate rapidly declining debt-to-GDP ratios into the foreseeable future [Finance Canada 2004; Conference Board of Canada 2004].

Differences of opinion exist with respect to the efficiency effects of debt reduction, which are generally measured in terms of changes in real output or consumption. James [1994], Macklem, Rose and Tetlow [1994] and Dahlby [2004], using different versions of a general equilibrium model, estimated that large permanent reductions in the debt-to-GDP ratio would generate sizeable increases in output and consumption over the long run. According to Dahlby, a permanent reduction of 50 percentage points in the debt-to-GDP ratio would raise the growth rate of real GDP by close to one-tenth of one percent. Myatt and Ruggeri [2004] argue that, within the framework of an automatic decline in the debt-to-GDP ratio, it is not meaningful to talk about permanent reductions in that ratio because any predetermined level of that ratio will be eventually achieved. Since the existing fiscal structure in Canada makes it impossible to fix the debt-to-GDP ratio without a return to deficit financing, the issue is one of timing: namely, when any arbitrarily chosen level of that ratio will be achieved. Myatt and Ruggeri show that the accelerated decline in the debt-to-GDP ratio that would occur under the repayment schemes suggested by the federal Minister of Finance would be equivalent to a permanent reduction in that ratio of between 2 and 5 percentage points. This means that the federal debt repayment plan is between 4 percent and 10 percent of the experiment conducted by Dahlby and would raise the growth rate of real GDP by between 4/1000 and 1/100 of a percentage point – both negligible amounts.

The conclusion that debt repayment cannot be justified on efficiency grounds has also been reached by Scarth [2004: 259], who summarized a review of the literature by stating that “studies focusing on efficiency indicate that virtually any debt ratio is as good, or not, as any other.” He further suggests that “the chosen target for the debt ratio must be based primarily on its consistency with society’s equity objectives, and particularly its objectives for intergenerational equity.”

The issue of intergenerational equity will be discussed in a systematic manner in this paper. After a brief review of studies on this topic for Canada in Section II, in Section III we present some fiscal projections that allow a quantitative evaluation of the intergenerational equity issue. Section IV summarizes the main conclusions and explores some of their policy implications.

The results indicate that the current fiscal structure in Canada, including the public debt and its servicing costs, does indeed have important intergenerational implications, but not as a result of population aging. The current tax structure is projected to lead to higher aggregate tax rates about 15 years from now, not because of spending pressures from population aging but because the fiscal structure is unbalanced and tends to generate surpluses of increasing amounts over time. The projected spending pressures over the next 22 years can be financed through a pattern of tax revenues that yields lower aggregate tax rates in the future. This means that debt repayment cannot be justified on intergenerational equity grounds because future generations in Canada would be in a more favourable fiscal situation than current generations – even without debt repayment – if the fiscal system were rebalanced to eliminate the projected surpluses.

II. Demographic foundations of intergenerational equity

The basis of the concerns about the public debt and intergenerational equity is the projected increase in the senior and total dependency ratios. Estimates of these ratios, based on projection 2 in Statistics Canada [2001], are shown in Table II-1. The third column indicates a steady upward trend in the elderly dependency ratio (the ratio of the population 65+ to the population 15-64). The increase is moderate from 2003 to 2014, but accelerates in the following 12 years. By 2026, the elderly dependency ratio is projected to rise by 81 percent to 33.6 percent. The youth dependency ratio (the other component of the total dependency ratio) is projected to follow a shallow U-shape, first declining up to 2016 and then rising again. By 2026, however, this dependency ratio is 12 percent lower than in 2003. The combination of these two ratios leads also to a U-shaped pattern of the overall dependency ratio, first falling up to 2011 and then rising again. Compared to 2003, the value of this ratio is only marginally higher in 2014, but 26 percent higher in 2026.

Economists and policy-makers are concerned about the implications of these trends in dependency ratios because the net benefit or burden of the fiscal system (taxes paid minus benefits received) varies with age. Therefore, the total level of government spending and the revenues needed to finance it are affected by shifts in the age composition of the population. For example, a combination of population aging (the trend projected for Canada) and above-average per capita government spending on seniors (the situation in Canada) raises the concern that the growth of government expenditures will escalate beyond the revenue-raising capacity of the current fiscal system. To the extent that this demographically induced increase in government spending requires higher tax rates, it may be viewed as being intergenerationally inequitable because it would impose a relatively higher tax burden on future generations.

**Table II-1
Projected dependency ratios in Canada, 2003-2026**

	Youth ratio %	Elderly ratio %	Total ratio %
2003	26.5	18.6	45.1
2004	25.8	18.9	44.7
2005	25.2	19.0	44.2
2006	24.7	19.0	43.7
2007	24.2	19.4	43.6
2008	23.8	19.8	43.6
2009	23.4	20.1	43.5
2010	23.0	20.5	43.5
2011	22.5	20.8	43.3
2012	22.5	21.5	44.0
2013	22.4	22.2	44.6
2014	22.4	22.9	45.3
2015	22.4	23.6	46.0
2016	22.3	24.3	46.6
2017	22.5	25.1	47.6
2018	22.5	26.0	48.5
2019	22.6	26.8	49.4
2020	22.7	27.7	50.4
2021	22.8	28.5	51.3
2022	22.9	29.5	52.4
2023	23.0	30.6	53.6
2024	23.1	31.6	54.7
2025	23.2	32.6	55.8
2026	23.4	33.6	57.0
change			
2003-2014	-4.1	4.3	0.2
2014-2026	1.0	10.7	11.7

Whether or not projected increases in the elderly and total dependency ratios will press the sustainability of the fiscal system and generate intergenerational inequities must be determined by empirical tests. Existing Canadian studies use a variety of analytical tools and reach different conclusions.

Oreopoulos and Kotlikoff [1996] analyzed Canada's fiscal structure using generational accounting. They concluded that the fiscal structure that existed in 1994 was unsustainable. In their view "if the existing fiscal structure remains in place for living generations, those born in the future could face net lifetime tax rates more than twice the current amount for newborns, in order that the government be able to pay its bills" [Oreopoulos and Kotlikoff 1996:36].

According to the OECD [2001], population aging will raise spending pressures on Canadian governments, especially from pensions and health care, even when savings from lower education and child benefit expenditures are taken into account. It will also depress the growth of revenues because of the lower growth rate of employment. The net result is expected to be a substantial deterioration of Canada's fiscal position.

Scarth and Jackson [1998] consider the retirement of the baby boom generation as a major socio-economic shock. They used an overlapping generations model of exogenous growth to estimate the economic impacts of the projected rise in elderly dependency ratios. They concluded that this shock will lead to a reduction in the living standards of future generations and recommended a reduction in the combined federal-provincial/territorial debt-to-GDP ratio to 50 percent. The same conclusion was reached by Scarth [2004] through the use of an overlapping generations model of endogenous growth. According to Scarth [2004: 247] "government debt is an instrument that society can use to smooth the burden of major structural shocks across generations. Within the context of population aging, this smoothing activity would require a reduction of the federal debt-to-GDP ratio to 25 percent within the next ten years and a reduction of combined federal/provincial debt-to-GDP ratio to 50 percent."

Alarm bells have also been sounded recently by the federal government in the November 2004 *Economic and Fiscal Update* [Finance Canada 2004], where the projected increase in the elderly dependency ratio was used as a primary justification for a policy of debt repayment. The *Update* states that "population aging will put significant pressure on Canada's public finances. Government program spending will increase as a result of increased demand for social programs, in particular health care and public pensions. Continued debt reduction will help the Government better deal with the fiscal challenges associated with population aging" [Finance Canada 2004: 19].

These pessimistic views of population aging and intergenerational equity have not remained unchallenged. Oreopoulos and Vaillancourt [1998] updated the generational accounting exercise performed by Oreopoulos and Kotlikoff [1996] by using 1995 as the base, thus incorporating the policy changes announced since the completion of the previous study. They concluded that "Canada's current fiscal policy is approximately at a state of sustainability. This implies that the tax burden borne by each generation will be the same in terms of their share of private income paid in taxes, or in other words, that the tax burden is proportional to real income over time" [Oreopoulos and Vaillancourt 1998: 14-15].

Merette [2002] used an overlapping generations model to evaluate the economic and fiscal implications of population aging in Canada. Merette stresses the positive effects that will be

generated by rising wages in an environment of potential labour supply constraints as the large baby boom cohorts retire. In his view, these higher real wages will provide strong incentives for younger people to acquire human capital and for older workers to postpone full retirement. In his view “as a result of these factors, it is even possible that the overall economic impact of aging in Canada will be positive” [Merette 2002: Summary]. On the fiscal side, Merette highlights the fact that government revenues will rise further in the future due to the taxable withdrawal of funds from tax-sheltered retirement saving plans, such as Registered Pension Plans and Registered Retirement Savings Plans. He suggests that the net tax expenditures on these programs will fall in the future and may even turn into a net gain. He concludes that “Canada is probably the best equipped among OECD countries to face population aging” [Merette 2002: 22].

III. Some measures of intergenerational equity

methodology

In this paper, we use a simpler but more comprehensive approach to the issue of population aging, public debt burdens and intergenerational equity. We start with economic projections from other sources [Department of Finance 2004; Conference Board of Canada 2004] and then develop the associated projections of government revenues and expenditures for all governments combined. Details of the methodology used in the economic and fiscal projections are found in the Appendix.

We use these projections to address three basic questions:

- will future generations experience the same growth of real GDP per capita as was experienced during the past 20 years?
- will future generations have to bear a higher tax burden in order to afford the same level of public services as current generations?
- how will the tax burden of future generations be affected by debt repayment plans consistent with recent announcements by the federal Minister of Finance?

living standards

Changes in living standards are often approximated by changes in per capita consumption. If real personal disposable income increases at roughly the same rate as real GDP, intergenerational comparisons of living standards can be approximated by comparisons of real GDP per capita. Average annual growth rates of real GDP per capita, actual from 1981 to 2002 and projected from 2002 to 2026, are shown in Table III-1. Inspection of this table leads to the following observations:

1. the average annual growth rate of real GDP is projected to be lower than during the previous 21 years by nearly half a percentage point;
2. the annual growth rate of real GDP per capita over the same period in the future is projected to be slightly higher than the annual growth rate over the previous 21 years;
3. comparing the current generation (all those living today) with the generation living about 20 years from now, we conclude that the future generation will experience slightly lower growth rates of real output but slightly higher growth rates of living standards, because of the deceleration in population growth;
4. the notion that future generations will experience a drop in either the level or the growth of living standards because of population aging is not supported by projections of real GDP per capita.

Table III-1
Real GDP per capita in Canada: actual from 1981 to 2002 and projected from 2002 to 2026

	Average annual percentage change		
	1981-2002	2002-2026	2020-2026
Real GDP	2.81	2.33	2.20
Real GDP per capita	1.67	1.71	1.68

current versus future tax burdens in Canada

We now turn to the issue of intergenerational fiscal equity. In general public parlance, the concern for intergenerational equity is expressed as a concern for leaving future generations with a higher tax burden than that borne by current generations. This concern can be transformed into a criterion of fiscal equity among generations as the maintenance of a constant share of GDP going to taxes. This criterion was used also by Oreopoulos and Vaillancourt [1998] in the evaluation of the intergenerational dimensions of the Canadian fiscal system in 1995, based on generational accounting. Given the pattern of tax revenues arising from this criterion, we can determine whether the level of program spending that it can finance represents a declining or rising share of GDP. A ratio of program spending to GDP that does not decline when the ratio of tax revenues to GDP remains constant provides some indication that future generations may not face a more unfavourable fiscal position than current generations.

Table III-2 shows the time-path of tax revenues and total revenues for all levels of government for the period from 2003-04 to 2025-26. Non-tax revenues are projected to grow at an average

rate of 2.72 percent per year, based on the assumptions explained in the Appendix. Tax revenues represented 29.77 percent of GDP in 2003-04. Under the assumption that this ratio remains constant throughout the entire projection period, tax revenues will grow at the same rate as nominal GDP (4.42 percent per year) while total revenues are projected to grow by 4.17 percent per year (0.94 percent of the growth of GDP).

We assumed that, starting in 2004-05, all revenues will be used to pay interest on the debt and to finance program spending. The public debt is assumed to remain constant for two reasons: (a) it will not decline because there is no debt repayment since all revenue is spent, and (b) there is no increase in the debt because the existing fiscal structure of all governments combined generates budget surpluses throughout the entire period [Ruggeri 2001; Conference Board 2004]. If interest rates remain at the current level, on average over the entire period, we can approximate debt servicing charges by maintaining their level as it existed in 2003-04. The results shown in Table III-2 lead to the following conclusions:

1. when tax revenues are kept as a constant share of nominal GDP, they are able to finance a growth rate of program spending slightly higher than that of nominal GDP (4.53 percent versus 4.42 percent);
2. a constant ratio of tax revenues to GDP yields a slightly rising share of program spending in GDP; the increase in the GDP ratio of program spending from 31.64 percent in 2003-04 to 32.38 percent in 2025-26 indicates that the same aggregate tax rate affords future generations a higher level of public services than current generations.

The faster rate of growth of program spending over tax revenues does not necessarily imply that future generations would be fiscally better off. For example, if this extra spending is required simply to meet the health care demands of an aging population, the current and future generations would be treated equally by the fiscal system despite the divergence in the GDP shares of tax revenues and program spending.

To address this issue, we performed a second experiment. We projected program spending and total spending on the assumption that public debt charges remain constant at their 2003-04 level. These projections represent what Canadian governments would spend in each year during the next 22 years in order to maintain the level of public services that exists today. These projections, therefore, are the equivalent of maintaining intergenerational equity on the spending side. We continued to assume that non-tax revenues increase at an average annual rate of 2.72 percent. This means that any deviations in program spending from the values estimated in the first experiment would be offset totally by changes in tax revenues.

Through this procedure we can estimate the aggregate tax rate (tax revenues divided by nominal GDP) that would be needed to finance the projected level of total government spending. If the aggregate tax rate so derived is not increasing, it provides an indication that future generations will not face a less favourable fiscal system than current generations. We also show, for comparison purposes, our projections of the aggregate tax rate that would be generated by the existing tax struc-

ture, regardless of the pattern of government spending. Details on the methodology for projecting program spending and tax revenues are found in the Appendix, and a summary of the results is contained in Table III-3.

Table III-2
Future tax burdens in Canada, 2003-04 to 2025-26: constant tax-to-GDP ratio

Fiscal Year	Nominal GDP \$ billion	Tax revenues keeping share to GDP constant \$ billion	Non-tax revenues projected \$ billion	Total revenues tax+ non-tax \$ billion	Revenues/ nominal GDP %	Associated Spending		
						Total spending \$ billion	Program spending \$ billion	Program spending/ nominal GDP %
2004	1,220.30	363.3	73.4	436.7	35.79	436.1	386.1	31.64
2005	1,292.50	384.8	75.8	460.6	35.63	460.6	410.5	31.76
2006	1,362.80	405.7	77.9	483.6	35.48	483.6	433.6	31.81
2007	1,428.80	425.4	80.0	505.3	35.37	505.3	455.3	31.87
2008	1,497.00	445.7	82.1	527.8	35.26	527.8	477.8	31.92
2009	1,567.00	466.5	84.3	550.9	35.15	550.9	500.8	31.96
2010	1,638.90	487.9	86.6	574.5	35.06	574.5	524.5	32.00
2011	1,711.00	509.4	88.9	598.3	34.97	598.3	548.3	32.04
2012	1,786.30	531.8	91.3	623.1	34.88	623.1	573.1	32.08
2013	1,864.90	555.2	93.8	649.0	34.80	649.0	598.9	32.12
2014	1,946.90	579.6	96.3	675.9	34.72	675.9	625.9	32.15
2015	2,032.60	605.1	98.9	704.0	34.64	704.0	654.0	32.18
2016	2,118.00	630.6	101.5	732.1	34.57	732.1	682.1	32.20
2017	2,206.00	656.8	104.3	761.0	34.50	761.0	711.0	32.23
2018	2,299.90	684.7	107.1	791.8	34.43	791.8	741.7	32.25
2019	2,396.20	713.4	109.9	823.3	34.36	823.3	773.3	32.27
2020	2,496.90	743.4	112.9	856.3	34.29	856.3	806.3	32.29
2021	2,596.70	773.1	115.9	889.0	34.24	889.0	839.0	32.31
2022	2,700.60	804.0	119.0	923.1	34.18	923.1	873.0	32.33
2023	2,808.60	836.2	122.2	958.4	34.12	958.4	908.4	32.34
2024	2,921.00	869.6	125.5	995.2	34.07	995.2	945.1	32.36
2025	3,037.80	904.4	128.9	1,033.3	34.02	1,033.3	983.3	32.37
2026	3,159.30	940.6	132.4	1,073.0	33.96	1,073.0	1,022.9	32.38

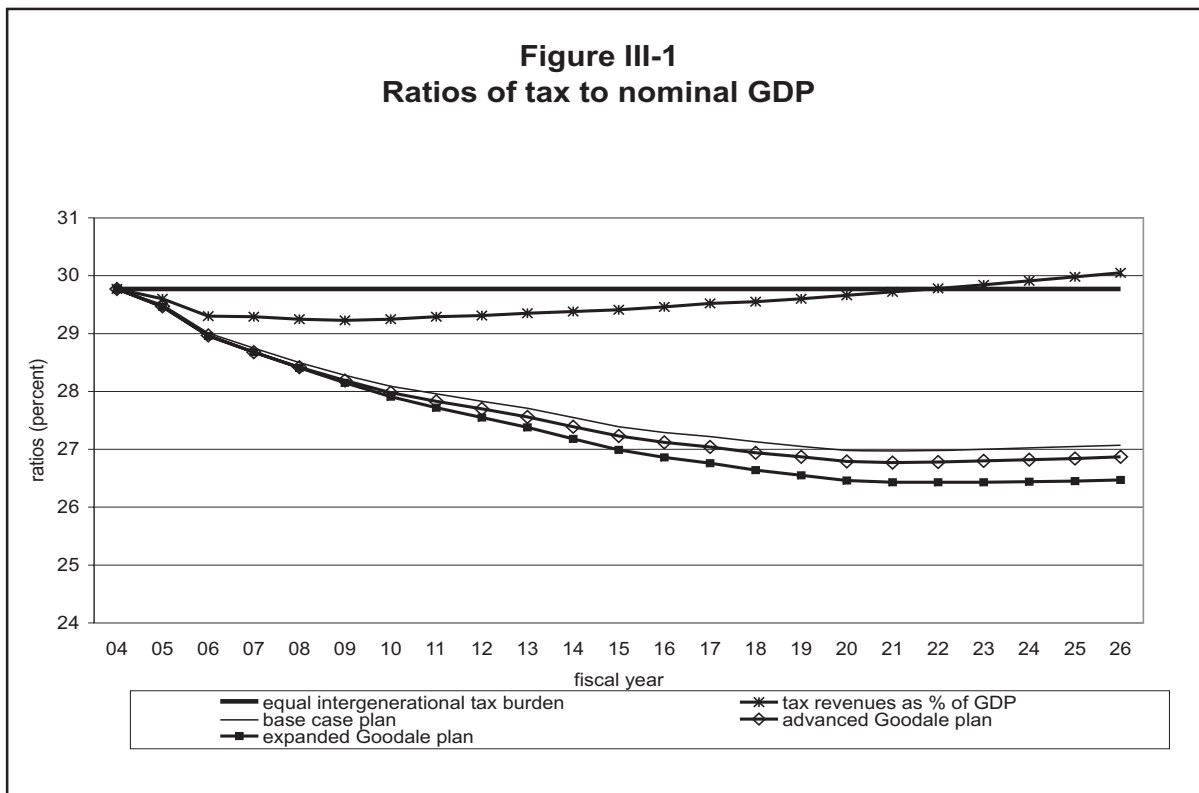
Inspection of this table leads to the following conclusions:

1. program spending is projected to increase at an average rate of 4.12 percent per year; a lower growth rate is projected for total government spending because of the zero growth in debt charges;

2. both total spending and program spending are projected to grow at a lower rate than nominal GDP, despite the spending pressures from population aging;
3. the projected pattern of program spending will lead to a steady decline in the aggregate tax rate from 2003-04 to 2020-21; despite a slight increase in the remaining five years, this aggregate tax rate is projected to decline by 9 percent (2.7 percentage points) from 29.8 percent in 2003-04 to 27.1 percent in 2025-26.

For intergenerational comparisons, it may be more meaningful to compare the current situation with that projected for the period after 2020. As shown in Figure III-1, the next 16 years may be viewed as a transition to a period where the aggregate tax rate stabilizes, and may increase at a modest rate. During the last five years of the projection period, total government spending is projected to continue to increase at a lower rate than nominal GDP (3.89 versus 4.00 percent). Program spending, however, is projected to increase at a slightly faster rate than nominal GDP (4.12 percent). Since non-tax revenues grow at a fraction of the growth of nominal GDP, the tax revenues needed to offset the projected expenditures will also rise at a slightly higher rate than GDP, resulting in the slight upward trend mentioned earlier.

As shown in the last column of Table III-3, the projected aggregate tax rates that would be generated by the existing tax structure combined with the projected rate of nominal GDP growth



follows a shallow U-shape pattern. It declines gently over the next five years, partly because the federal projections of corporate income tax revenues, which served as the basis for the projection of total corporate income tax revenues, show little growth in those revenues over the next six years.

Table III-3
Future tax burdens in Canada, 2003-04 to 2025-26: projected spending

Fiscal Year	Program expenditure \$ billion	Total expenditure \$ billion	Program/ GDP %	Total revenues \$ billion	Tax revenues \$ billion	Tax revs./ GDP %	Projected tax/GDP %
2004	386.1	436.1	31.64	436.7	363.3	29.77	29.77
2005	407.0	457.0	31.49	457.0	381.2	29.50	29.60
2006	423.2	473.3	31.06	473.3	395.4	29.01	29.30
2007	440.7	490.7	30.84	490.7	410.7	28.75	29.29
2008	458.8	508.8	30.65	508.8	426.7	28.50	29.25
2009	477.5	527.6	30.47	527.6	443.2	28.28	29.23
2010	497.0	547.0	30.33	547.0	460.4	28.09	29.25
2011	517.2	567.3	30.23	567.3	478.3	27.96	29.29
2012	538.4	588.5	30.14	588.5	497.1	27.83	29.31
2013	560.4	610.5	30.05	610.5	516.7	27.71	29.35
2014	582.6	632.6	29.92	632.6	536.3	27.55	29.38
2015	605.6	655.6	29.79	655.6	556.7	27.39	29.41
2016	629.5	679.5	29.72	679.5	578.0	27.29	29.46
2017	654.7	704.7	29.68	704.7	600.5	27.22	29.52
2018	680.9	730.9	29.61	730.9	623.9	27.13	29.55
2019	708.2	758.2	29.55	758.2	648.2	27.05	29.60
2020	736.6	786.6	29.50	786.6	673.7	26.98	29.66
2021	766.2	816.3	29.51	816.3	700.3	26.97	29.72
2022	797.8	847.8	29.54	847.8	728.7	26.98	29.78
2023	830.6	880.7	29.57	880.7	758.4	27.00	29.84
2024	864.9	914.9	29.61	914.9	789.4	27.02	29.91
2025	900.5	950.6	29.64	950.6	821.6	27.05	29.98
2026	937.7	987.8	29.68	987.8	855.3	27.07	30.05
avg. annual % change							
2004-2026	4.116	3.79		3.78	3.97		0.04
2021-2026	4.122	3.79		3.89	4.08		0.22

The aggregate tax rate then rises steadily throughout the remainder of the projection period and ends up in 2025-26 at a higher level (30.05 percent) than existed in 2003-04 (29.77 percent). This long-term increase results from tax revenues growing at an average annual rate (4.46 percent) slightly higher than the growth rate of nominal GDP (4.42 percent), which implies a tax revenue elasticity of 1.01. Even during the period from 2020-21 to 2025-26, tax revenues are projected to grow at a slightly faster rate (4.23 percent) than either nominal GDP (4.00 percent) or program expenditures (4.12 percent).

It would be incorrect to view the projected increase in the aggregate tax rate generated by the current tax structure as an indication that the current fiscal structure is intergenerationally inequitable because it will impose higher tax burdens on future generations. This intergenerational inequity is due not to the spending pressures of population aging, but to a structural imbalance in the fiscal system of all Canadian governments combined (effectively only a federal structural imbalance). These spending pressures have been incorporated into our projections of program spending. Our calculations indicate that the projected government expenditures can be financed by a tax structure that generates substantially lower aggregate tax rates over the next 22 years and even further into the future, given the considerable difference between the projected tax rate in 2025-26 and the actual rate in 2003-04 and the minuscule increase projected for the last five years of the projection period.

The above results also highlight the importance of identifying specific periods of time when making intergenerational comparisons. Canadians alive in 2026 will experience a more favourable fiscal regime than those alive today if they are not required to pay extra taxes in order to generate budget surpluses for the federal government. Canadians alive in 2040 are also likely to be fiscally better off than the current generation, but may be fiscally worse off than those alive in 2026.

debt repayment and tax burdens

The results of these two simple experiments indicate that the current fiscal structure is biased *in favour* of future generations. Intergenerational fiscal inequity does exist, but goes in the opposite direction from the view of conventional wisdom. If the projected economic trends materialize, future generations will have a fiscal advantage over current generations because they will be able to finance the current level of public services with a substantially lower tax burden. Yet, the federal government announced in the November 2004 *Economic and Fiscal Update* that it intends to continue its policy of using part or all of each year's budget surplus for debt repayment.

The federal government's target of a 25 percent federal deficit-to-GDP ratio in ten years announced in the 2004 Federal Budget does not have attached a specific annual amount of debt repayment. Two debt repayment options consistent with announced federal policy have been compared with a no repayment policy by Myatt and Ruggeri [2004] (hereafter called MR) to determine the efficiency effects of debt repayment. We will use the results from the above study to evaluate the intergenerational effects of these debt repayment plans. The time-path of the public debt and the debt-to-GDP ratio under the alternative three cases is shown in the Appendix. MR

show that the 25 percent target for the federal debt-to-GDP ratio will be achieved in ten years even without any debt repayment, providing evidence on how quickly these targets become obsolete when the government runs balanced budgets. The policy issue has now become: which arbitrary portion of the projected federal surpluses should be used for debt repayment?

The November 2004 *Economic and Fiscal Update* contains estimates of the federal debt and the debt-to-GDP ratio over the period from 2003-04 to 2009-10 under the alternative assumptions of balanced budgets and debt repayment equal to the Contingency Reserve. In the first option, which is called the advanced Goodale plan, MR assumed a debt repayment of \$3 billion per year over the entire projection period.

The *Update* also stresses that “the practice of applying the surplus against the debt is in keeping with Generally Accepted Accounting Principles set by the Public Sector Accounting Board of the Canadian Institute of Chartered Accountants ... the year-end surplus must be applied against the federal debt” [Department of Finance 2004: 11-12]. The above statement may be interpreted as an indication that the federal government plans to continue the recent practice of applying the entire surplus to debt repayment. In the second scenario, MR took this possibility into consideration by assuming that half of the projected surplus will be allocated to that purpose. MR acknowledged that the surplus would be affected by the changes in interest payments due to debt repayment. To simplify the calculations, however, they allocated to debt repayment only half of the surplus that would be generated in the absence of debt repayment, an approach also used in the *Update*.

We used MR’s results in the following manner. We started with the same level of the public debt and calculated the ratio of debt charges to net debt in the initial year 2003-04 (close to ten percent). The Conference Board [2004] projected a fluctuating interest rate along a fairly stable value. We maintained a constant “interest rate” of ten percent for the entire projection period because we are more interested in underlying trends rather than annual fluctuations. Next, we calculated the difference in the level of the net debt between each of the two options and the base case of no debt repayment. Applying the constant “interest rate” we estimated the annual savings from debt repayment. These savings were applied entirely to tax revenues. Finally, we calculated the aggregate tax rates under the two options and the differences from the base case. These differences measure the effects of the two debt reduction options on intergenerational equity because they show how much less of a the tax burden future generations would have to bear in order to finance the same level of public spending as in the base case.

The effect of the two debt repayment options on the future aggregate tax rate is shown in Table III-4. The results lead to the following observations:

1. the reduction in the aggregate tax rate (the ratio of tax revenues to GDP) due to the two debt repayment options is minor. In 2025-26, the reduction in the aggregate tax rate is one-fifth of a percentage point under the advanced Goodale plan and three-fifths of a percentage point under the expanded Goodale plan;

Table III-4
Debt repayment and tax burdens in Canada, 2003-04 to 2025-26

Fiscal Year	GDP \$ billion	Base case \$ billion	Advanced Goodale plan \$ billion	Expanded Goodale plan \$ billion	Base case plan %	Advanced Goodale plan %	Expanded Goodale plan %
2004	1,220	363.3	363.3	363.3	29.77	29.77	29.77
2005	1,293	381.2	380.9	380.8	29.50	29.47	29.46
2006	1,363	395.4	394.8	394.7	29.01	28.97	28.96
2007	1,429	410.7	409.8	409.8	28.75	28.68	28.68
2008	1,497	426.7	425.5	425.2	28.50	28.42	28.41
2009	1,567	443.2	441.7	441.1	28.28	28.19	28.15
2010	1,639	460.4	458.6	457.4	28.09	27.98	27.91
2011	1,711	478.3	476.2	474.3	27.96	27.83	27.72
2012	1,786	497.1	494.7	492.1	27.83	27.70	27.55
2013	1,865	516.7	514.0	510.6	27.71	27.56	27.38
2014	1,947	536.3	533.3	529.2	27.55	27.39	27.18
2015	2,033	556.7	553.4	548.6	27.39	27.23	26.99
2016	2,118	578.0	574.4	568.9	27.29	27.12	26.86
2017	2,206	600.5	596.6	590.4	27.22	27.04	26.76
2018	2,300	623.9	619.7	612.8	27.13	26.94	26.64
2019	2,396	648.2	643.7	636.2	27.05	26.87	26.55
2020	2,497	673.7	668.9	660.6	26.98	26.79	26.46
2021	2,597	700.3	695.2	686.3	26.97	26.77	26.43
2022	2,701	728.7	723.3	713.7	26.98	26.78	26.43
2023	2,809	758.4	752.7	742.3	27.00	26.80	26.43
2024	2,921	789.4	783.4	772.3	27.02	26.82	26.44
2025	3,038	821.6	815.3	803.6	27.05	26.84	26.45
2026	3,159	855.3	848.7	836.3	27.07	26.87	26.47
avg. annual % change					-0.43	-0.47	-0.53

2. the tax rate reduction due to debt repayment is a small portion of the rate reduction that is projected to occur automatically as a result of the interaction of the current fiscal structure and the projected economic trends; it represents 7.4 percent of the automatic decline under the advanced Goodale plan and 22.2 percent under the expanded Goodale plan;
3. the magnitude of this effect increases more rapidly in the first ten years and then stabilizes around the value in 2025-26.

The additional reduction in the aggregate tax rate due to debt repayment can be achieved also by leaving the total tax level unchanged (no debt repayment) and raising the level of GDP. Estimates of the expansion of GDP needed to yield the same aggregate tax rates as under the two debt repayment options in 2025-26 are shown in Table III-5. Maintaining a constant level of the public debt would require a level of GDP in 2025-26 higher by \$23.8 billion (0.75 percent) compared to the advanced Goodale plan and by \$71.9 billion (2.28 percent) compared to the expanded Goodale plan. These higher levels of GDP would be achieved by raising the growth rate by 4/100 percentage points and 11/100 percentage points, respectively.

In our view, these results provide a useful guide to public policy. Table III-3 shows that, in the last five years of the projection period, the aggregate tax rate needed to finance projected government spending will end its descent and start rising very slightly. This change in direction is due much more to the reduction in the average annual growth rate of nominal GDP, which falls to 4.00 percent during the 2021-26 period from 4.54 percent during the previous 17 years, than to a change in the growth of program spending, which rises very slightly in the last five years compared to the previous period. Given the very small reductions in the aggregate tax rate generated by the two debt repayment options, we suggest that it would be preferable to let future tax rates fall even further, not through debt repayment, but by increasing economic growth through selective tax cuts and public investment today that would increase the productive capacity of both current and future generations.

Table III-5
Changes in GDP equivalent to tax rate changes in debt repayment options

	Difference in 2025-26		Change in growth rate
	GDP level \$ billion	percent of GDP	percentage points
Advanced Goodale Plan	23.8	0.75	4/100
Expanded Goodale Plan	71.9	2.28	11/100

IV. Conclusions

The intergenerational equity case for debt repayment is based on three premises [Scarth 2004; Finance Canada 2004]: (a) population aging will affect negatively the living standards of future generations, (b) the spending pressures from population aging will lead to higher aggregate tax burdens on future generations, and (c) these negative effects can be eliminated through debt reduction. This paper presents some evidence that none of these premises hold true.

First, it shows that, despite population aging and trends in economic activity based on economic projections by the Department of Finance [2004] and the Conference Board of Canada [2004], the living standards (measured by real GDP per person) of future generations will grow at the same rate as they did over the past two decades.

Second, the current structure of government spending when applied to these economic trends will require aggregate tax rates (tax revenues as percent of nominal GDP) that will be lower over the next 22 years than they are now.

Third, the current tax structure will lead to a slightly higher aggregate tax burden on future generations, not because of the added spending pressures from population aging, but because current tax rates are higher than what is needed to finance the projected expenditures. Intergenerational inequities that would be uncovered by projections of the current fiscal structure would be generated by structural fiscal imbalances and not by population aging.

Fourth, debt repayment options consistent with statements by the federal Minister of Finance would yield minor reductions in the aggregate tax rates even 22 years from now. What affects the budgetary position is not the change in the net debt but the change in the interest on the debt.

The results of this paper indicate that, within an intergenerational framework, the real issue is not the size of the public debt but the persistence of an unbalanced fiscal structure (confined to the federal level). Debt repayment does not correct this imbalance; it actually aggravates it by reducing the total level of public spending that must be financed by a given level of government revenues. What is needed is fiscal re-balancing, not debt repayment.

In our view, rebalancing the fiscal structure would offer the opportunity to bypass intergenerational equity tradeoffs. If this re-balancing took the form of selective tax reductions and expanded public investment, it would benefit current generations by lifting the burden of an unbalanced fiscal structure while equipping future generations with a higher stock of productive assets, thereby raising their economic and fiscal capacity. To the extent that these re-balancing measures are designed to reduce income inequalities among all those who are alive in a given period, this strategy would also improve intragenerational equity.

Over the past decade, Canadians were asked to make fiscal sacrifices in order to fight the war against the deficit. That war has long been over and there is no rationale for a war on the debt. Asking Canadians to continue making sacrifices in order to deliver annual budget surpluses for the federal government makes little economic and fiscal sense.

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Appendix

A. Economic Projections

For projecting real GDP, we started with the data contained in the November 2004 *Economic and Fiscal Update*. For the period from 2003-04 to 2009-2010, we derived the value of real GDP from table 3.6 [Finance Canada 2004: 77]. Starting with this above value in 2009-2010, we applied the growth rate in the Conference Board [August 2004] up to 2014-15 and the Conference Board [February 2004] for the period up to 2019-20. Noting that the average annual growth rates for each of the above three sub-periods declined over time, we assumed a further small decline for the remaining 20 years of the projection period. The same approach was used for projecting nominal GDP and the results are shown in appendix Table C-1.

B. Fiscal Projections

Data sources and adjustments

The base-year data used for our projections are found in CANSIM tables 3850001 and 3840009. We adjusted the data found in CANSIM table 3850001 by eliminating three self-financing programs, thus focusing the analysis on the fiscal structure.

CPP/QPP Benefits and Contributions. This component of the fiscal system is separate from budgetary revenues and expenditures. Under full funding, which was the aim of the recent reform, the pensions received after retirement are equivalent to deferred labour compensation. The pensions are similar in nature to private annuities. In Canada, payment of these pensions does not impose a burden on government finances, so this item should not be included in our calculations.

Public Sector Pensions. A similar argument can be made for pensions paid by government department and agencies to their retired employees. These pension schemes are not different from those offered by private sector employers. Any financial pressures that may arise from population aging would be handed by adjustments to the structure of these programs without requiring budgetary decisions.

Workers' Compensation. The above argument about pensions can be extended to the Workers' Compensation program. This is also a separate fund that collects revenues from a payroll tax on employers and pays benefits to workers who are injured.

Expenditures

We used two approaches to project government expenditures. In the first approach, we project per capita expenditures and then multiply the results by the population to derive the projection of total spending. In the second approach, we project total expenditures directly.

per capita growth approach

Items not Related to Population Aging. Various components of government spending are projected to grow at rates that are affected by population growth, but not by population aging. For these spending components, we assumed that per capita expenditures will grow at the rate of inflation plus half a percentage point to capture other cost pressures. Adding population growth will result in an average annual growth rate in excess of 3 percent. The spending categories projected with this approach are: general government services; labour, employment and immigration; housing; foreign affairs and international assistance; regional planning and development; transportation and communications; resource conservation and industrial development; environment; recreation and culture; and research establishments.

Protection of Persons and Property (Other than National Defence). For this spending item we assumed per capita growth equal to inflation (2.0 percent) plus adjusted productivity growth (1.4 percent) on the premise that real wages will track labour productivity growth. The adjustment to labour productivity growth is made in order to account for the slightly higher projection of consumer inflation over producer inflation.

Health Care. Health care expenditures were divided into nine age groups and seven categories of services based on Health Canada [2001]. The age groups are: 0-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. The services categories include: hospitals, other institutions, physicians, drugs, home care, other services and administration. We started with per capita expenditures by age group and type of service contained in Health Canada [2001] and adjusted them proportionally to ensure that total expenditures in 2000-01 matched those in CANSIM table 3850001. The per capita cost of all services was assumed to increase by 3.4 percent per year (inflation plus adjusted labour productivity). Additional growth factors were assigned to selected types of services, based on cost pressures: 0.5 percent for hospitals and 0.6 percent for physicians because of potential labour supply pressures, 3.0 percent for drugs because of the introductions of new drugs, and 0.5 percent for other expenditures to capture additional costs from new equipment. The projected per capita expenditures by type of service and age group were aggregated to yield the projection of total health expenditures by all levels of government combined.

Education. Education expenditures include: (a) primary and secondary education, (b) postsecondary education, and (c) other expenditures, including retraining. The first category also includes three components: wages for educators, wages for non-teaching staff and other spending. We projected the total number of full-time equivalent (FTE) educators and non-teaching staff based on projected enrollment and applied a growth rate of 3.4 percent to wages per FTE. Other expenditures were assumed to track inflation. The same wage growth per FTE was assumed for postsecondary education; however, following the results from the Conference Board [2004], we projected stable postsecondary education enrollment and FTE staff. Other education expenditures were projected to increase at the rate of inflation.

Government expenditures on *Social Assistance (Welfare), Other Social Assistance (Excluding Old Age Security Benefits, Employment Insurance Benefits, Veteran Benefits, GST Credits and Child Tax Benefits)* were projected to increase by inflation plus half of adjusted productivity growth, implying

real increases in social assistance rates over time but less than increases in real wages. The same approach was used for *Other Social Services*.

Old Age Security Expenditures include three items: (a) Old Age Security (OAS) benefits, (b) the Guaranteed Income Supplement (GIS), and (c) the Allowance. Since OAS benefits are indexed for inflation, we assumed that benefits per senior will increase at the rate of inflation (thus discounting the income-testing at the high end of the income scale). For the other two components, we used a growth rate of benefits per beneficiary of 1.5 percent to take into account that these programs are income-tested.

Motor Vehicle Accident Compensation expenditures per person aged 16 and above were projected to increase at the inflation rate.

Expenditures projected at the aggregate level

Spending on *National Defence* was projected to grow at an average annual rate of 2.5 percent.

Employment Insurance Benefits. We started with the values from CANSIM table 3840009 and applied the annual increases projected by the Department of Finance [Finance Canada 2004] up to 2009-10. For the rest of the projection period we increased benefits by the same amount of the increase in contributions.

Veterans Benefits were projected to increase at a rate of 1.5 percent per year, based on past trends.

Goods and Services Tax Credit. The cost of this credit was projected to increase at the combined rate of inflation and population growth.

Canada Child Tax Benefit. Spending on these programs was projected to increase at the combined rate of inflation and the population in the 0-17 age group.

Other Spending. We assumed a basic growth rate of 2.5 percent per year. We also added \$1 billion extra per year, cumulatively, for ten years to incorporate electoral promises with respect to a national child care program and extra spending on infrastructure.

Revenues

Personal Income Taxes. We started with the revenue recorded in table 3850001 for 2003-04. For the period up to 2009-10, we raised it by the increase in the federal personal income tax shown in the *Economic and Fiscal Update* [Finance Canada 2004] times the provincial share based on historical trends. For the remainder of the period, we assumed that personal income tax revenues grow, on average, at an annual rate 25 percent higher than that of nominal GDP. This implicit “elasticity” of 1.25 takes into consideration the re-indexing of the personal income tax.

Corporate Income Taxes. For the period from 2004-05 to 2009-10, we started with the projections contained in the *Economic and Fiscal Update* [Finance Canada 2004] for federal revenues and multiplied them by the ratio of total revenues to federal revenues that existed during the past ten years. For the rest of the projection period, we assumed that corporate income tax revenues will grow at the same rate as nominal GDP. An elasticity of 1.0 was assumed also for mining and logging taxes, natural resource taxes and licences, and provincial payroll taxes.

General Sales Tax revenues (which include the Goods and Services Tax, the Harmonized Sales Tax, and provincial sales taxes) were assumed to grow at a rate slightly lower than nominal GDP (an implicit elasticity of 0.95) to take into account exemptions, deductions and the tax-free status of exports. A similar assumption was made for amusement taxes, other consumption taxes and miscellaneous taxes.

Customs Duties and Corporate Capital Tax revenues were kept constant at their 2003-04 level to take into account the trend towards further reductions in these taxes at the federal level.

Revenues from taxes on *Alcoholic Beverages and Tobacco Products* were projected to increase at a rate of 1.5 percent per year (0.5 percent less than inflation) because of anti-smoking policies and population aging.

Remitted Gaming Profits and Real Property Taxes. Revenues from these sources were projected to increase at a rate of 3.0 percent per year (inflation plus extra growth factor for increases in property values) plus the growth of the population aged 15 and over.

Revenues from *Motor Vehicle Licenses and Liquor Profits* were projected to increase at the combined rate of inflation and population growth (population aged 15 and over).

Fuel Taxes were divided into two parts – the transportation of goods and the transportation of people. The first part was projected to increase at the rate of real GDP plus one percentage point, under the assumption that fuel inflation is partly offset by technological advances. The second part was projected to increase at a rate of 2.0 percent per year because population aging and technological changes are expected to reduce the demand for fuel.

Health Insurance Premiums were assigned a growth rate of inflation plus population growth.

Employment Insurance Premiums. For the period from 2004-05 to 2009-10, we used the values recorded in the *Economic and Fiscal Update* [Finance Canada 2004]. For the remainder of the period, the increase in contributions matched the increase in benefits.

Sales of Goods and Services include two components – tuition and other sales. We assumed annual growth rates of 3.0 percent for the first component and 2.0 percent for the other.

Investment Income contains three sub-categories: (a) royalties, (b) remittances from government enterprises, and (c) interest and other investment income. The value for the last category was

adjusted in 2003-04 to ensure consistency in the treatment of contribution by and pensions for public service employees (which were both excluded from our calculations or revenues and expenditures). Component (b) was projected to grow in line with nominal GDP. The other two components were projected to increase at the rate of 3.0 percent per year.

Income Taxes on Non-Residents were placed in a separate category and included in non-tax revenues because they are government revenues but do not impose a burden on Canadian taxpayers. They were assumed to grow at the rate of inflation.

C. Public Debt Estimates from Myatt and Ruggeri [2004]

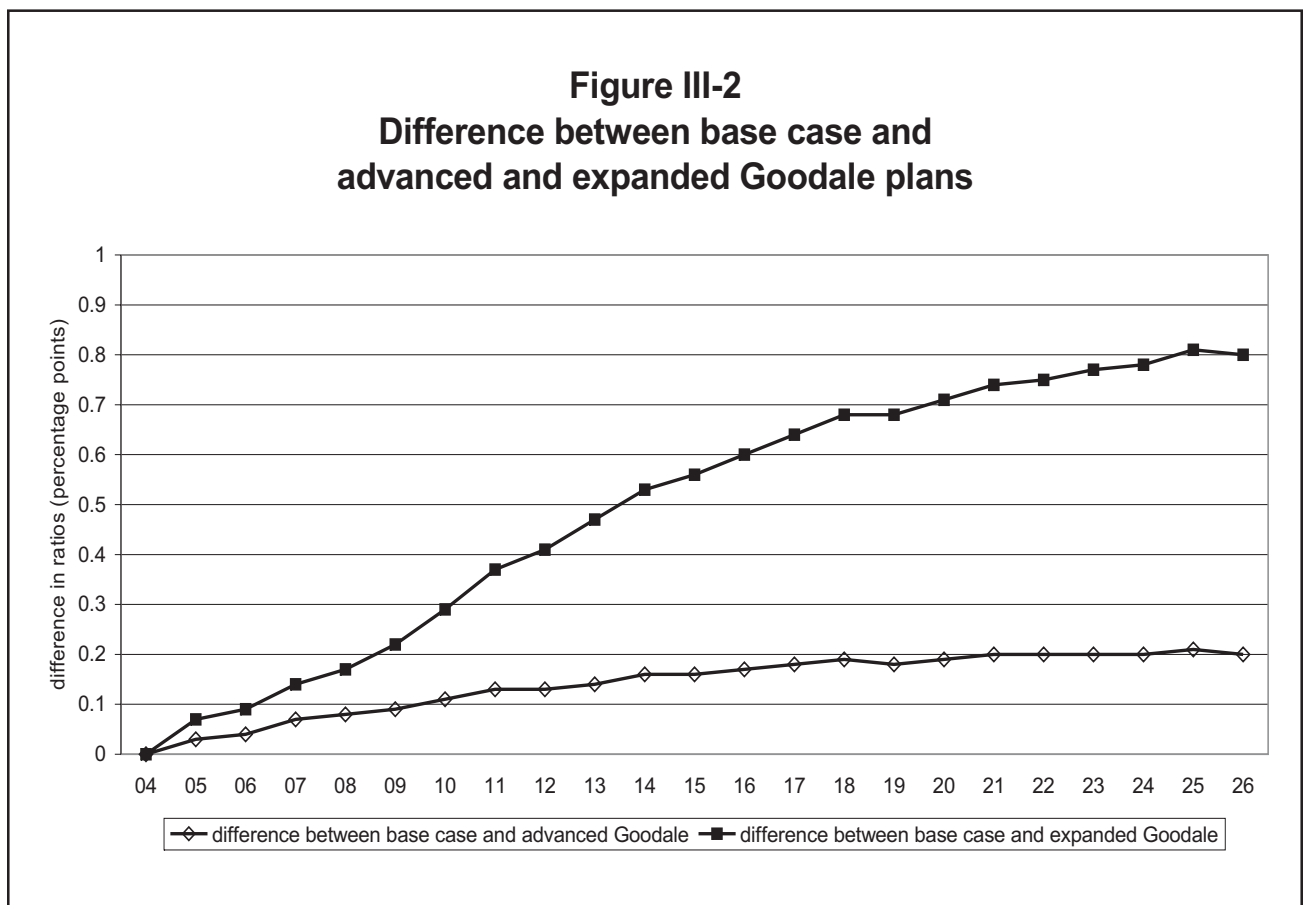


Table C-1
Projections of federal debt-to-GDP ratios under alternative scenarios

Fiscal year	Nominal GDP \$ billion	Federal debt (1) \$ billion	Ratio (1)	Federal debt (2)	Ratio (2)	Federal debt (3)	Ratio	Ratio Difference	
			%	\$ billion	%	\$ billion	%	(1) - (2)	(1) - (3)
2004	1220.3	501.5	41.10	501.5	41.10	501.5	41.10	0	0
2005	1292.5	501.5	38.80	498.5	38.57	497.0	38.45	0.23	0.35
2006	1362.8	501.5	36.80	495.5	33.36	494.7	36.30	0.44	0.50
2007	1428.8	501.5	35.10	492.5	34.47	491.7	34.41	0.63	0.69
2008	1497.0	501.5	33.50	489.5	32.70	487.1	32.54	0.80	0.96
2009	1567.0	501.5	32.00	486.5	31.05	480.1	30.64	0.96	1.37
2010	1638.9	501.5	30.60	483.5	29.50	470.9	28.73	1.10	1.87
2011	1711.0	501.5	29.31	480.5	28.08	460.9	26.94	1.23	2.37
2012	1786.3	501.5	28.07	477.5	26.73	450.9	25.24	1.34	2.83
2013	1864.9	501.5	26.89	474.5	25.44	440.9	23.64	1.45	3.25
2014	1946.9	501.5	25.76	471.5	24.22	430.9	22.13	1.54	3.63
2015	2032.6	501.5	24.67	468.5	23.05	420.9	20.71	1.62	3.97
2016	2118.0	501.5	23.68	465.5	21.98	410.9	19.40	1.70	4.28
2017	2206.0	501.5	22.72	462.5	20.96	400.9	18.17	1.77	4.56
2018	2299.6	501.5	21.81	495.5	19.96	390.9	17.00	1.83	4.81
2019	2396.2	501.5	20.93	456.5	19.05	380.9	15.90	1.88	5.03
2020	2496.9	501.5	20.06	453.5	18.16	370.9	14.85	1.92	5.23
2021	2596.7	501.5	19.31	450.5	17.36	360.9	13.90	1.96	5.41
2022	2700.6	501.5	18.57	447.5	16.57	350.9	12.99	2.00	5.58
2023	2808.6	501.5	17.86	444.5	15.83	340.9	12.14	2.03	5.72
2024	2921.0	501.5	17.17	441.5	15.11	330.9	11.33	2.05	5.84
2025	3037.8	501.5	16.51	438.5	14.43	320.9	10.56	2.07	5.96
2026	3159.3	501.5	15.87	435.5	13.78	310.9	9.84	2.09	6.03

Source: Myatt and Ruggeri [2004], Table 2.