



C.D. Howe Institute

Backgrounder

www.cdhowe.org

No. 109, December 2007

Fiscal Policy

Time and Money

The Challenge of Demographic Change and Government Finances in Canada

William B.P. Robson

The Backgrounder in Brief

As a result of demographic change, Canadian governments face a net liability of \$1.4 trillion for healthcare, education, seniors' and children's programs. Meeting this challenge will require fiscal discipline, partial prefunding and growth-friendly policies.

About the Author

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\$5.00; ISBN 0-88806-730-5;
ISSN 1499-7983 (print); ISSN 1499-7991 (online)

As Canada's babyboomers move through middle age and closer to retirement, a long-anticipated transformation of the country's demographic structure is accelerating. In several respects, Canadians are unprepared for this change. They are still not ready for the dual challenge of a rapid rise in the share of seniors in the population, and much slower growth of the workforce. Nor are they ready for the eventual fiscal consequences — a major rise in the share of income Canadians will need to devote to publicly funded programs. Barring some wrenching changes in public finances, this rise will force today's youngsters to pay higher taxes for their lifetime package of public programs than their parents and grandparents did.

This *Backgrounder* puts a dollar figure on that rising tab — the net additional claims public programs will make on Canadian incomes as a result of demographic change. It uses a handful of straightforward assumptions about economic growth, increases in servicing intensity, and inflation. Overlaying those on projections of Canada's future population, it calculates the share of Canadians' incomes — measured in gross domestic product (GDP) — that will be needed for programs devoted to health, education, the elderly and children in the future.

Comparing that cost with the share of income devoted to these same programs in the recent past gives an indication of the change in the "price" required to buy a package of services for a person of a given age. Demographic change will push the price, or share of income, down for some programs such as family benefits and education. This gives governments a kind of implicit asset: they could lower taxes or raise spending elsewhere, and yet deliver the same value per recipient of education or family benefit programs as they do now. For other programs, mainly healthcare, demographic change will drive the share-of-income price up. This gives governments an implicit liability: they will need to raise taxes or cut other programs to deliver the same value per recipient of healthcare as they do now.

This notion of implicit assets and liabilities lets us put the fiscal impacts of demographic change into a ledger alongside other more familiar balance-sheet measures. These include the debts recorded on budgets (which will oblige governments to charge more in taxes than they deliver in programs in the future), and the unfunded liabilities of the Canada and Quebec Pension Plans (C/QPP) (which will oblige future contributors to pay more than an actuarially fair price for their benefits). The key difference is that Canadians are already paying interest to cover most of governments' on-budget debts, and partial pre-funding of the C/QPP has also brought some of the ultimate costs of those programs forward in time. By contrast, direct experience of the increased cost of the demographically driven liabilities still lies in the future.

I thank Colin Busby, Yvan Guillemette and Jean-Claude Ménard for comments on an earlier draft. Responsibility for errors and conclusions is mine alone.

Discounted at 4.8 percent over 50 years — the yield on high-quality provincial-government bonds at the time of writing — demographically driven programs create a net liability for governments of almost \$1.4 trillion. This burden, however, is unevenly spread. Ottawa comes out in a net asset position, thanks mainly to prospective declines in spending on children. Provinces, by contrast, face massive increases in healthcare spending, which falling education budgets only partially offset.¹ Geographically speaking, the outlook generally worsens moving from west to east across the country.

These liabilities are considerably larger than public-accounts debts and the unfunded liabilities of the Canada and Quebec Pension Plans (C/QPP). They also dwarf the deferred taxes governments will take in when Canadians bring their pension savings into income. To maintain the current age distribution of public spending, future taxpayers will need to pay more for their lifetime package of programs than did their predecessors. Among the steps that could alleviate this problem are more rigorous spending control and budget surpluses, further transfers of tax room from Ottawa to the provinces, prefunding of some healthcare obligations and growth-friendly policies that will boost Canadians' incomes — the base on which Canada's social programs ultimately rest.

Estimating Demography's Impact on Public Programs

The idea behind this assessment of the fiscal implications of demographic change is simple: to see what would happen if recent patterns of demographically sensitive spending persist as the populations of Canada and each province change. It begins with population projections using a handful of assumptions:

- each province's total fertility rate remains at its 2006 level through the projection period;
- life expectancies at birth rise at rates akin to those in Statistics Canada's "medium" improvement;
- interprovincial migration for each age/sex category goes from its 2001 – 2006 average in 2007 down to zero over 10 years; and
- net international migration for each province in each age/sex category continues at its 2001 – 2006 average through the projection period.

Each province's GDP is the product of its projected working-age population (18 to 64 years) times a productivity index of output per potential worker. Future growth in each province's index occurs at the same rate as the equivalent national measure did during the stable-inflation period from 1994 to 2006: 2.1 percent annually.

¹ This study also looks at the territories. For the sake of conciseness, the term "provincial" covers both provinces and territories.

The next step is to take current patterns of expenditure for four major program categories:

- **Healthcare.** Six age groups for each sex in each province² are projected on the assumptions that service intensity — the volume of services provided per person — in each group rises at the same rate as the productivity index: 2.1 percent annually.³ Health-sector inflation is projected at 2.2 percent — the average annual increase in the national deflator for government consumption expenditures since 1994;⁴
- **Education.** Provincial spending⁵ on elementary school students is projected from provincial populations aged 4 to 17 years, and spending on postsecondary students is projected from populations aged 18 to 24. As with health, service intensity — real instruction expenses per student — grows with the productivity index at 2.1 percent annually, and inflation in education grows at 2.2 percent, in line with historical increases in the government consumption deflator. Federal grants to students grow with the population of 18- to-24-year-olds and the same index of service intensity, while the fixed-dollar Canada Education Saving Grant changes with the population of pre-university age: 0 to 17 years.
- **Elderly benefits.** The key data for projecting elderly benefits are inflation-adjusted benefits per person age 65 and up for federal Old Age Security, Guaranteed Income Supplement and Allowances. These are calculated using projections for these programs from the federal Chief Actuary (OCA 2005). Since the provinces with such programs do not provide similar projections, the per-senior costs of provincial programs are assumed to rise at the same rate as those of the federal programs.⁶
- **Child and family benefits.** Most spending is projected from populations aged 0 to 17, on the assumption that all relevant per-child amounts rise with inflation.⁷

2 Age/sex breakdowns from the Canadian Institute for Health Information are prorated to match aggregate national spending for 2006.

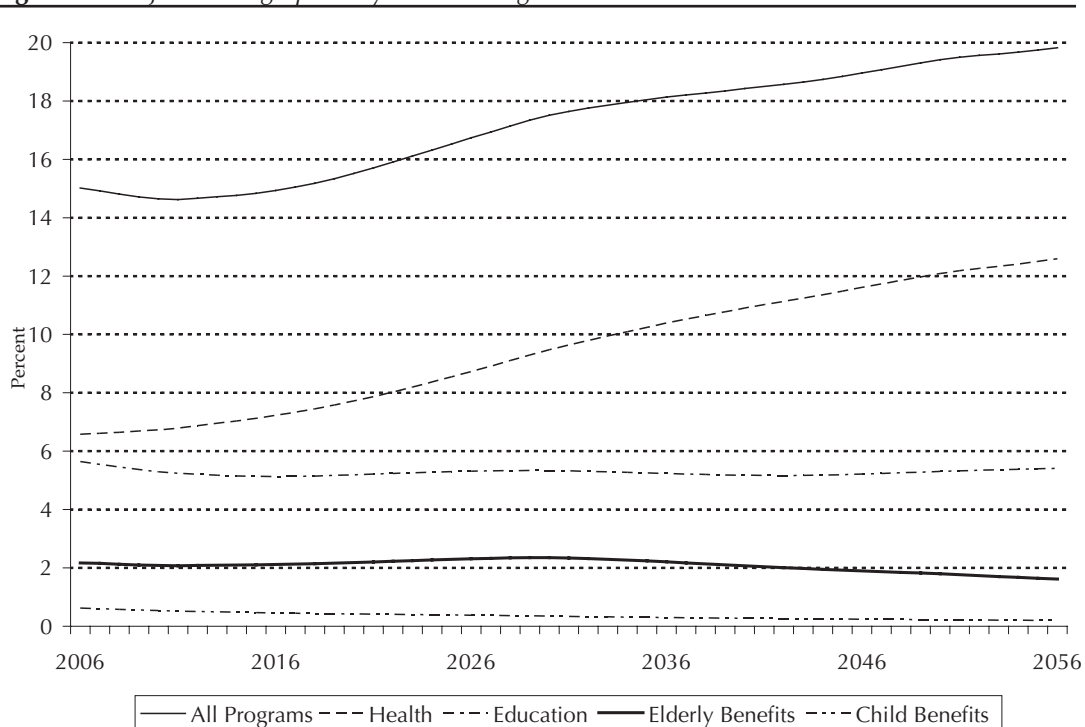
3 Proper measures of the volume of services provided in health and education are elusive, because taking account of the quality of the outputs is so hard. Linking volume of services per person to output per person is arbitrary, but has the virtue of clarifying the demographic issues: with no change in the ratio of service recipients to potential workers, increases in volumes of services delivered that matched productivity increases would imply no change in the share of real output consumed by these services.

4 True measures of price change in health and education are elusive for the same reason that proper measures of volume of services are elusive, so the government consumption deflator is a convenient, though highly imperfect, measure of inflation. Note also that actual increases in government consumption deflators have varied considerably from province to province, as have actual increases in output per working-age person. Since some of these variations reflect cyclical influences and particular provincial circumstances over the 1994 – 2006 period, the projections use common national figures for both.

5 Statistics Canada's Financial Management System (2006, 27-28) shows both provincial and local spending on elementary and secondary education; since provinces now largely control these budgets, I show the total as provincial.

6 Provincial spending in 2006 is from SPSPD/M, Release 14.1 (responsibility for use and interpretation rests with the author). I thank Finn Poschmann for his assistance in producing these figures.

7 Provincial spending is from SPSPD/M; federal spending on the Child Benefit is from the Public Accounts.

Figure 1: Major Demographically Driven Programs as Share of GDP: National Total

Source: Author's calculations as described in text.

The Results

Projected national costs for each program type for both levels of government, expressed as shares of GDP, appear in Figure 1. Demographic change will raise their aggregate cost from slightly less than 15 percent of GDP in the next decade to almost 20 percent by 2056. To provide perspective relative to today's economy, a five percentage-point increase represents an added tax burden of \$75 billion a year — or about \$3,500 per working person — to finance a comparable per-beneficiary program mix. This is more than total provincial personal income-tax collections in 2006/07, and more than double Ottawa's revenue from the Goods and Services Tax for the same year.

In two important senses, the national total understates the difficulties Canadians will have dealing with this implicit liability. First, current spending patterns and demographic forces differ considerably from province to province: Quebec and the Atlantic provinces face more difficult situations than provinces from Ontario westward. Second, the overwhelming source of the trouble — the rising healthcare costs of an aging population — is the responsibility of the provinces to bear. While Ottawa provides some transfer payments notionally linked to healthcare, the goods and services devoted to actual care are financed from provincial budgets.

An illuminating summary measure of the size of these implicit obligations is the value of the difference between the share of GDP any individual program (or all programs together) draws on today and the share it (or they) will draw in the future, discounted to a present value. The inspiration for this measure is that these programs are the subjects of implicit political promises: with regard to

Table 1: *Demographically Driven Implicit Assets and Liabilities (\$bn except as noted)*

	Health	Education	Elderly Benefits	Child/Family Benefits	Total	Total as % of 2007 GDP
Canada	-1,904.4	234.1	52.1	240.3	-1,377.8	-91
Nfld & Lab.	-42.7	4.7	-0.2	0.1	-38.2	-148
P.E.I.	-6.1	0.9	--	--	-5.2	-115
Nova Scotia	-54.6	5.8	--	0.2	-48.6	-146
New Brunswick	-45.0	5.1	-0.0	0.1	-39.8	-151
Quebec	-421.1	4.6	--	--	-416.5	-140
Ontario	-742.1	134.6	0.2	3.1	-604.2	-103
Manitoba	-47.1	5.7	0.0	--	-41.4	-88
Saskatchewan	-30.5	4.4	0.0	--	-26.0	-55
Alberta	-236.0	18.7	-2.6	1.1	-218.7	-87
B.C.	-261.2	34.7	0.0	0.5	-226.0	-119
Yukon	-5.3	0.2	--	--	-5.2	-309
NWT & Nunavut	-12.6	1.1	--	--	-11.5	-204
Federal	--	13.7	54.6	235.1	303.4	20
Provincial/Territorial	-1,904.4	220.5	-2.5	5.2	-1,681.2	-111

Note: Negative sign indicates liability.

Source: Author's calculations as described in text.

healthcare, for example, the dominant political discourse treats the current mix of health services as a "right" of citizenship, and implies that it will continue to be available in the future on terms similar to those of the present — presumably including a tax cost like that now paid. Since the promise is a political one, an appropriate time-horizon over which to consider its cost would be the life expectancy of the median-age Canadian — roughly 50 years.

Discounting the change in a program's share of GDP over 50 years produces a figure that can supplement other measures of government net worth (Table 1). As discussed earlier, they can be characterized as implicit assets or liabilities, which measure the gap between the implicit promises to beneficiaries of public programs and the implicit promises to taxpayers. In that sense, they resemble the bonus that net assets, and the wedge that net debt, put between programs and taxes, or the unfunded liabilities in the Canada and Quebec Pension Plans (C/QPP) that will make future contributors pay more than the actuarial cost of their benefits.

The critical message from Table 1 is that demographic change combined with unchanged patterns of age-specific spending will put enormous pressure on government budgets in Canada. The total net liability across the country is not far short of \$1.4 trillion — 91 percent of 2007 GDP. While there are good reasons not to want to fully prefund an obligation of this size, the discounting calculation gives a sense of the scale of the task: to provide the current age-specific package of programs without raising taxes over the next half century would require a stock of assets — assuming it earned an annual return of 4.8

percent — of \$1.378 trillion.⁸ The contributions of different types of programs to this total are different enough to warrant a brief review:

Healthcare

The age/sex profile of spending interacts with demographic change to create dramatic increases in healthcare spending. More rapidly aging provinces, notably in the east, face powerful pressure. Countrywide, the projected increase in health budgets' share of GDP over the coming half-century creates an aggregate liability of more than \$1.9 trillion.

Education

In education, declining school- and postsecondary-age populations create a net asset, especially for provinces. The total national implicit asset related to education is almost \$235 billion.

Elderly benefits

Perhaps surprisingly, elderly benefits do not loom large as an implicit item on government balance sheets, and the largest figure is an implicit asset for the federal government amounting to some \$55 billion. The key factor behind this result is that seniors' benefits are indexed to prices only. With productivity growth strong enough to offset the declining number of working-age people relative to seniors — for which a 2.1 percent annual growth in output per potential worker is sufficient — real income growth outpaces the cost of these benefits over time.⁹ While the bulge of older babyboomers does drive the cost of these programs higher than current levels between 2020 and the late 2030s, moreover, they drop relative to GDP before 2020, which weighs heavily in a discounted calculation.

Child benefits

Child and family benefits shrink over time, creating an implicit asset of some \$240 billion nationwide. Nearly all of this budgetary relief occurs at the federal

⁸ This total is considerably larger than the \$810 billion calculated on a similar basis in Robson (2006). While the interactive nature of the calculations makes additive breakdown of the changes since that study impossible, key factors are:

- The assumption that inflation in health and education will be 2.2 percent (the increase in the government consumption deflator since 1994) rather than 2.0 percent as in the previous study.
- Healthcare spending hikes in the past year, which increased the exposure of governments to aging-related healthcare costs in the future.
- The advance of time by one year, which brings one year closer the date at which the pressure of the baby boom's aging ramps up healthcare and seniors' benefit costs.
- Use of a market interest rate (the long Ontario bond rate of 4.8 percent) rather than the arbitrary 5 percent rate used in the previous study. At a 5 percent discount rate, the net liability would be \$1,286 billion; at a 6 percent discount rate, it would be \$916 billion.

⁹ The projections of the Chief Actuary (OCA 2005) show a rising ratio of payments in these programs relative to GDP because they assume a lower growth rate of output per worker.

Table 2: *Demographically Driven Balances in Broader Context (\$bn except as noted)*

	Demographically Driven Subtotal	C/QPP	Deferred Pension Tax	Net Public Assets/Debt	Total	Total as % of 2007 GDP
Canada Total	-1,377.8	-812.9	473.9	-749.4	-2,466.2	-163
Nfld. & Lab.	-38.2	-6.4	2.3	-12.4	-54.7	-212
P.E.I.	-5.2	-1.7	0.6	-1.4	-7.8	-172
Nova Scotia	-48.6	-11.8	4.5	-12.7	-68.5	-205
New Brunswick	-39.8	-9.4	3.0	-7.2	-53.4	-203
Quebec	-416.5	-96.5	56.0	-106.8	-563.8	-189
Ontario	-604.2	-157.4	70.3	-137.3	-828.6	-141
Manitoba	-41.4	-14.1	5.6	-10.8	-60.8	-129
Saskatchewan	-26.0	-11.7	4.4	-5.5	-38.9	-83
Alberta	-218.7	-41.5	19.8	33.1	-207.3	-83
B.C.	-226.0	-54.8	17.9	-21.2	-284.1	-150
Yukon	-5.2	-0.4	0.1	0.1	-5.3	-317
NWT and Nunavut	-11.5	-0.8	0.4	0.0	-11.8	-211
Federal	303.4	-406.5	289.1	-467.3	-281.3	-19

Note: Negative sign indicates liability.

Sources: OCA 2007; Public Accounts data; Statistics Canada; author's calculations.

level: Ottawa provides several benefits that are geared to youngsters, who will form a shrinking share of the population. Being cash rather than services, these benefits will also tend to shrink relative to incomes as productivity rises over time.

The Larger Fiscal Context

The tally in Table 2 represents an attempt to put the assets and liabilities associated with demographically sensitive programs into a framework that allows comparison to other measures of governments' fiscal positions. So it makes sense to show these totals alongside three other important amounts: the unfunded liabilities of the C/QPP system; the implicit government asset of deferred taxes on private pension saving; and the familiar cumulative budget surpluses and deficits of the federal and provincial governments.

The Canada and Quebec Pension Plans

In assessing the financial condition of the CPP, the Office of the Chief Actuary estimates the amount of money the CPP would need to have on hand to pay benefits accrued to date if further benefit accruals and contributions were to cease. The difference between that obligation and the assets in the plan is its unfunded liability. Although the actuarial projections of the QPP do not provide

an estimate of the unfunded liability, the similarity of the QPP to the CPP allows a reasonable approximation.

The most recent actuarial valuation of the CPP (OCA 2007) estimated its unfunded liability at \$620 billion in 2007. If the unfunded liability of the QPP is proportional to the ratio of Quebec's population age 18 and over to that of the rest of Canada — 31 percent — it would stand at \$193 billion.

Dividing these amounts across the country involves some arbitrary judgements. The CPP is formally a joint federal-provincial program, while the QPP is a provincial program that is required to offer similar benefits. For consistency, I therefore allocate half the unfunded liability of the CPP and QPP alike to the federal government. The rest of the QPP's liability appears as an obligation of the Quebec government.

In principle, the non-federal half of the CPP's liability could be allocated among the provinces in proportion to the benefits under the program accrued by participants to date if they are still working, and while they were working if they are retired. This exercise would require examination of the work histories of current and former CPP contributors — for convenience, I allocate the liability according to provincial shares of the population 18 and over for Canada outside Quebec. The result, shown in the second column of Table 2, is a net obligation for Canadian governments of some \$813 billion, of which half is federal, and the rest provincial.

Deferred Taxes on Private Pension Saving

A further sensible addition to this evaluation of long-term fiscal positions is tax that will be payable on savings in employer-sponsored registered pension plans or registered retirement saving plans (RPP/RRSPs) when they are taken into personal income. Data from the national balance sheet accounts show the assets in RPPs at \$789 billion in mid-2007; the 2005 Survey of Financial Security put the value of RRSPs and related funds at \$593 billion — if their growth has paced growth in GDP, they would stand at \$656 billion in 2007, giving a total for both types of retirement savings of \$1,445 billion.

A handful of assumptions (as in Robbins and Veall 2002) permit a valuation of these assets that is comparable with other financial liabilities and assets. I assume that a 20 percent average federal tax rate will apply to the distributions from these plans,¹⁰ and use this figure plus the distribution of personal income-tax collections in fiscal year 2006/07 from Statistics Canada's Financial Management System to obtain tax collections for the provinces.¹¹ I also assume that the rate of return on investments in these plans will be the same as my 4.8 percent discount rate, which makes the present value of tax-deferred pension savings to governments equal to the amount saved times the pertinent tax rate.

10 The 20 percent figure is from Robbins and Veall (2002). It assumes a considerably higher average tax rate on future pension income than the federal personal income tax currently imposes on all income, so a more cautious assessment of the fiscal outlook might use a lower figure.

11 Statistics Canada, CANSIM, Table 385-0001. Ideally, the distribution of future tax collections among the provinces would reflect the actual drawdown of pension savings by seniors in each one, but those projections would require more detail on the holding of assets by age and geography than is available.

This reasoning yields a total asset for all governments of close to \$475 billion, of which about \$290 billion is federal.

Public-Accounts Net Debt

The third column in Table 2 simply shows the most recent net debt figures for the federal and provincial-local governments as shown in their respective public accounts. These figures are imperfect: for most governments, they include only financial assets on the credit side, and understate some liabilities, such as public-service pensions. Because of their familiarity and wide acceptance, however, they seem the best figures to include in this tally.

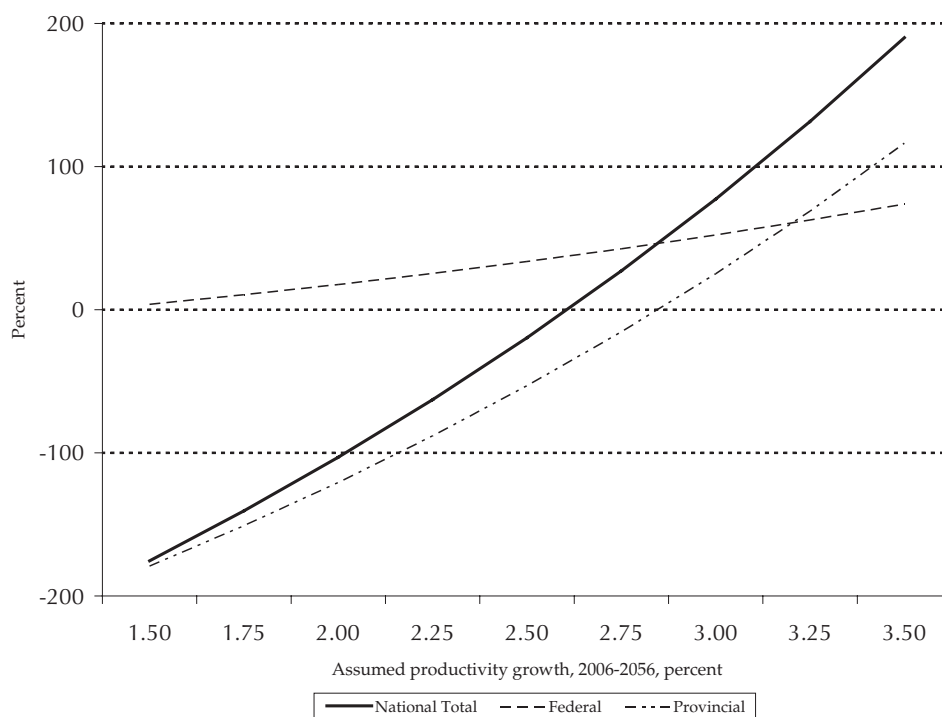
The total of all these items — a demographically augmented balance sheet — appears in the final column of Table 2. At \$2.5 trillion, or about 160 percent of 2007 GDP, the net obligation for the country as a whole is more than three times the net figure in the more familiar public-accounts balance sheets alone. Adding the demographically driven assets and liabilities to government balance sheets shows that aging will boost the tax cost of the programs and transfers Canadians now enjoy, notwithstanding the implicit assets arising from a relatively smaller young population in the future and the fact that deferred taxes on pension savings will one day become payable.

Summary and Implications

The key message from this review is that implicit liabilities from healthcare are Canadian governments' biggest long-term fiscal challenge, with an implicit liability of some \$1.9 trillion facing the provinces. Seniors' benefits, as currently designed, will likely have relatively small impacts on government budgets, and the projected decline in the draw of education and child benefits on Canadian incomes will partially offset the rising cost of healthcare. Nevertheless, at almost \$1.4 trillion, Canadian governments' total net demographically driven liability dwarfs their on-budget debts and the unfunded liabilities of the C/QPP. Deferred taxes on private pension saving are significant, but nowhere near enough to cover these explicit and implicit claims on Canadians' future incomes.

Preparing for the squeeze that will begin in earnest around the end of the next decade requires action on several fronts.

- Foremost is a restoration of fiscal discipline. Consistent budget over-runs at all levels over the past decade (Adrian, Guillemette and Robson 2007) have caused governments to pay down less debt than would otherwise be the case, kept taxes higher than they otherwise would be, and inflated costs in programs that will experience more upward pressure in the future. Holding inflation in health and education to the same 2 percent rate assumed for the rest of the economy would, by itself, reduce the demographically driven liability to less than \$1 trillion.
- Fiscal discipline in Ottawa is crucial, so federal taxes can come down and make more room for the revenue provinces will need in the future.
- In addition to paying down on-budget debt, Canadian governments could prefund some of the healthcare sub-programs in which rapidly

Figure 2: *Demographically Driven Liability as Share of GDP with Different Productivity Growth Rates*

Source: Author's calculations.

escalating costs are foreseeable. While it is neither practical nor desirable to try amassing an investment fund as large as the entire implicit liability calculated here, partial prefunding of individual programs, such as drug programs for the elderly, could spread the much higher future costs of these programs through time.¹²

Finally, and fundamentally, bolstering the economic base of each province and the country as a whole through growth-friendly policies is a critical approach to alleviating the pressure of these programs. Assume a half-percent increase in productivity growth from its recent value, not accompanied by a similar change in health and education service intensity, and the present value of the demographically driven liability drops by some 75 percentage points of current GDP. An increase in productivity growth to a little above 2.5 percent annually would eliminate the national net liability; an increase in productivity growth to slightly more than 2.75 percent would eliminate the aggregate provincial-level liability, and let Canadians as a whole look forward to devoting a smaller share of their future incomes to these programs (Figure 2).

Aging and a slower-growing workforce threaten a massive increase in the fiscal cost of age-sensitive public programs in Canada. Canadians need fiscal discipline, partial prefunding and growth-friendly policies to help them meet this challenge.

¹² A parallel here is with the partial prefunding of the C/QPP, which did not undo all the intergenerational inequities in the plans, but has contained the rise in contribution rates that would otherwise occur. Robson (2002) shows how this approach could work for health programs.

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