RECORD OF SOCIETY OF ACTUARIES
1995 VOL. 21 NO. 3B

THE IMPLICATIONS OF PUBLIC DEBTS IN NORTH AMERICA

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A comprehensive look inside government debt problems will be presented, as well as what we can do about it and how we can get out of it. The implications for the economy and industry will be explored. Time will also be spent discussing unfunded liabilities of public retirements.

MR. ROBIN M. RICHARDSON: I am Director of the International Centre for the Study of Public Debt at The Fraser Institute in Vancouver. The Centre's mission is to inform the public in Canada and abroad about the severity of its all-government debt problem and to propose responsible and efficient ways to reduce it.

It is a pleasure to be invited to speak to you again. I very much enjoyed participating in last year's panel discussion on the Canadian debt at the CIA annual general meeting in Calgary, Alberta. This year the CIA has broadened my assignment to include the U.S. in view of your meeting jointly with your U.S. counterpart, the SOA.

During the past year we have been doing research at The Fraser Institute on developing a set of generational public debt. Chris is a Ph.D. candidate at Harvard University and is now in his second summer as a student intern at The Fraser Institute.

This conference will be the first public presentation of Chris' research on the generational accounts of Canada, and I cannot think of a better professional audience to whom to present this important work.

MEASURING ALL-GOVERNMENT DEBT

The Government as a Whole

Let me introduce you to how we measure government debt at The Fraser Institute's International Centre for the Study of Public Debt. First, I try to measure the "government sector as a whole." This not only means all levels of government in a country—federal, provincial or state, and local—but also all of the categories of government debt and other obligations.

In Canada our federal statistical agency, Statistics Canada, has a public institutions division that takes the budgets and public accounts of every government in the country and puts them on a standardized basis adjusting for differences in accounting. The resulting set of accounts is called the financial management system (FMS) and contains statistics that allow for comparisons between governments.

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The FMS database is my basic building block. I also include some other obligations that presently Statistics Canada excludes but will eventually include as it moves toward the government sector as a whole. As a result, our "expanded FMS" measure of net debt to gross domestic product (GDP) was 106% as of March 31, 1994 compared with Statistics Canada's 93% at the same date. The items that I include that are not as yet included in Statistics Canada's FMS database are: (1) hospital debt, (2) tax-supported government business enterprises, (3) contingent liabilities, (4) commitments, (5) unfunded liabilities of civil service pensions, and (6) unfunded liabilities of worker's compensation plans.

Table 1 shows Canada's debt in recent years measured on a gross and a net debt basis. The difference between gross debt and net debt is financial assets. The table is based on the most recent figures from Statistics Canada. Note the trend in the debt-to-GDP ratio—net debt to GDP is estimated to now exceed 100%, but was only 70.4% in fiscal 1990–91 for all levels of government. A poor economy is only part of the reason for this abysmal performance. Continued deficits together with compounding interest have added to the Canadian debt in recent years.

I also want to point out that Statistics Canada now says that the net debt to GDP for all governments was really 97.1% in fiscal 1993–94, not the 93% estimated last year. The difference between our 106% and Statistics Canada's 93% of a year ago was criticized in some quarters, but there is now general agreement by most informed observers that Canada's government debt problem is more serious than the official statistical agency report.

In 1994 I began to look at the unfunded liabilities of Canada's social security system, in particular the Canada Pension Plan (CPP) and Quebec Pension Plan (QPP). In Table 2, at $605 billion at December 31, 1992, this category alone was 80% of the gross debt of all levels of government in Canada. By December 31, 1994, these unfunded liabilities had risen to $704 billion and almost matched the net debt of all levels of government in Canada.

The unfunded liabilities of the Canada and Quebec pension plans are, of course, unfunded actuarial liabilities that do not constitute a legal obligation to pay. They reflect "promises to pay," which will surely be broken unless there are major changes in Canadian public policy such as large increases in contribution rates, postponement of the age of retirement and/or cuts in benefits to pensioners.

More recently, I have begun to look at other components of Canada's social security system. The unfunded liabilities of the OAS and Medicare are shown in Table 2 for the years since 1990. By December 31, 1992, the unfunded OAS was $248 billion, or 36% of GDP and the unfunded Medicare was $672 billion or 98% of GDP. By December 1994, the unfunded OAS had risen to $276 billion and the unfunded Medicare was $765 billion.

Table 2 updates the excellent study *Troubled Tomorrows—The Report of the Canadian Institute of Actuaries Task Force on Retirement Savings,* published in January, 1995. In total, Canada's "other debt," that is, the unfunded actuarial deficit of the CPP and QPP, the OAS and the Medicare system at $1.5 trillion at December 31, 1992 was 221.7% of GDP and almost double the $844 billion of outstanding debt of the Government of Canada, the provinces and territories and all municipal governments across the land. This "other debt"

of actuarial unfunded liabilities represents a program of future promises to Canadians. Whether they be filled or broken is one of the major public policy issues facing Canadians today.

TABLE 1
GROSS DEBT VERSUS NET DEBT:
CANADA'S ALL-GOVERNMENT DEBT* 1990–91 to 1994–95
(FMS BASIS, $ BILLIONS, UNLESS OTHERWISE STATED)

Levels of Government	1990–91	1991–92	1992–93	1993–94	1994–95
Gross Debt					
1. Federal	$445	$477	$516	$559	N/A
2. Provincial/ Territorial	210	239	276	N/A	N/A
3. Local	47	50	52†	N/A	N/A
4. Total All-Government Gross Debt	$702	$766	$844	$N/A	$N/A
5. Gross Domestic Product	$699	$674	$688	$712	$749
6. Gross Debt to GDP (%)	100.4%	113.6%	122.7%	N/A	N/A
Net Debt					
1. Federal	$387	$421	$462	$504	$543
2. Provincial/ Territorial	84	109	139	162	182
3. Local	21	22	23	25	27†
4. Total All-Government Net Debt	$492	$552	$624	$691	$752
5. Net Debt to GDP (%)	70.4%	81.9%	90.7%	97.1%	100.4%

*Excludes contingent liabilities, unfunded liabilities, workers' compensation, unfunded liabilities of tax-supported government business enterprises, government loan guarantees, commitments, and unfunded liabilities of civil service pensions.
†Estimate.
Source: Data from Statistics Canada, Government of Canada; International Centre for the Study of Public Debt, The Frasier Institute, Vancouver, B.C.

Gross Debt Versus Net Debt

The all-government debt figure used to make comparisons between countries and within countries is net debt, not gross debt. By deducting financial assets, we are assuming that the government entity gets full book value for all of its financial assets and then applies these funds to reducing the gross debt. This allows for better comparisons of different governments' indebtedness because a jurisdiction with substantial financial assets may be in a better position to support a larger debt.

TABLE 2
UNFUNDED ACTUARIAL LIABILITIES
OF CANADA'S SOCIAL SECURITY PROGRAMS
($ BILLIONS UNLESS OTHERWISE STATED AS OF DECEMBER 31)

Programs	1990	1991	1992	1993	1994
1. CPP	$ 392	$ 420	$ 454	$ 488	$ 528
2. QPP	131	140	151	163	176
3. Total CPP/QPP	523	560	605	651	704
4. Old Age Security (OAS)	222	235	248	262	276
5. Medicare	590	630	672	717	765
6. Total Unfunded Actuarial Liabilities	1,335	1,425	1,525	1,630	1,745
7. GDP	699	674	668	712	749
8. Unfunded Actuarial Liabilities of Canada's Social Security Programs to GDP (Percentage)	191.0%	211.4%	221.7%	228.9%	233.0%

Table 3 shows some examples of the differences in using gross debt or net debt for international comparisons. The data are from the Organization for Economic Cooperation and Development (OECD) which uses yet another measurement of government debt, the system of national accounts (SNA) basis, which is even narrower than the FMS since it excludes the liabilities of civil service pension plans and some other smaller items.

We see in Table 3 the dramatic difference for Japan of using the SNA net debt versus gross debt for international comparison purposes. Gross debt was 81.7% in 1994, placing Japan as the sixth most severely indebted of 19 OECD countries for which government debt statistics were available. Using net debt, Japan's net debt-to-GDP ratio was only 9.2%, dropping Japan to 13 out of the 15 countries for which net debt statistics were available. (These figures are from the *OECD Economic Outlook*, Paris, France: June, 1995, pp. A37–38).

We also see from Table 3 that Canada's performance in terms of all-government indebtedness on the SNA basis is considerably worse than the OECD average, the Group of Seven (G-7) average, and the U.S. The U.S. did better (that is, lower) than the OECD and G-7 averages. This is one of the main conclusions of this presentation.

Indebtedness Indicators

The mission of The Fraser Institute's International Centre for the Study of Public Debt is: (1) to inform the public in Canada and abroad about the severity of its all-government debt problem and (2) to propose responsible and efficient ways to reduce the public debt.

After measuring all-government debt in Canada, we sought to make the broadest possible international comparison for all of the countries of the world for which we could obtain government debt statistics. Using the World Bank as our source for information on the developing countries, we accepted its classification of these countries into three categories: the severely indebted category (SIC), the moderately indebted category (MIC) and the less indebted category (LIC) (Chart 1).

TABLE 3
DEBT AS A PERCENTAGE OF GDP FOR SELECTED OECD COUNTRIES
IN 1994 (SNA BASIS, AS OF MARCH 31, 1994)

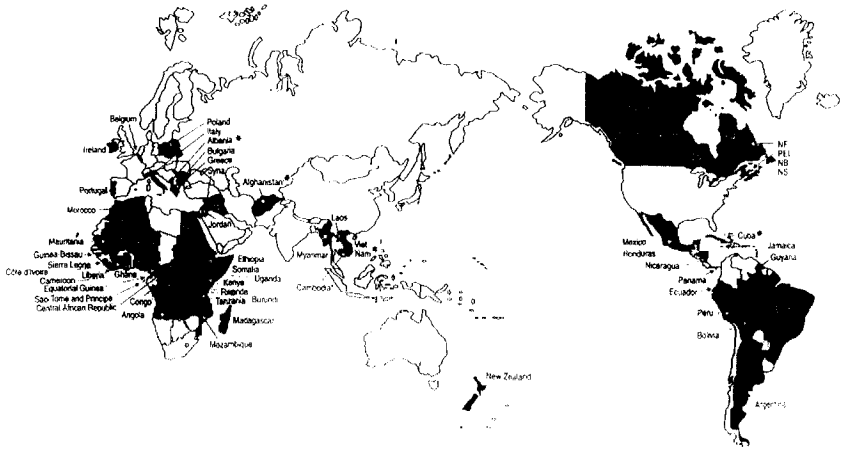
Countries	Gross Debt		Net Debt	
	Debt-to-GDP	Ranking	Debt-to-GDP	Ranking
1. Belgium	140.1%	1	127.8%	1
2. Italy	122.6	2	121.0	2
3. Greece	119.8	3	N.A.	N.A.
4. Canada	**94.6**	**4**	**64.2**	**3**
5. Iceland	87.9	5	N.A.	N.A.
6. Japan	81.7	6	9.2	13
7. Sweden	79.4	7	23.4	12
8. Netherlands	79.0	8	60.3	4
9. Portugal	70.4	9	N.A.	N.A.
10. Denmark	68.7	10	35.5	9
11. Spain	63.5	11	46.8	5
12. United States	**63.2**	**12**	**37.7**	**8**
13. Finland	62.0	13	−2.1	14
14. Austria	59.0	14	N.A.	N.A.
15. France	56.8	15	32.5	10
16. Germany	54.6	16	37.9	7
17. United Kingdom	51.6	17	45.4	6
18. Norway	47.7	18	−14.3	15
19. Australia	35.5	19	24.4	11
20. The Group of Seven (G-7) Countries	70.1	N/A	40.0	N/A
21. Total of Above OECD European Countries	72.4	N/A	56.9	N/A
22. Total of Above OECD Countries	70.4	N/A	41.5	N/A

N.A. = Not Available N/A = Not Applicable *G-7 = U.S., Japan, Germany, France, Italy, U.K., and Canada.
Source: *OECD Economic Outlook*, Paris, France: June 1995, pp. A37–38.

Following a methodology adapted from the World Bank, we use four indebtedness indicators of debt levels and debt affordability to analyze the OECD countries for which government debt statistics are available and to classify them into the SIC, MIC, and LIC categories.

Table 4 shows the criterion used in making this classification. Those of you from the U.S. will be pleased to learn the you have not as yet "joined the third world" as far as your government indebtedness is concerned, but you are getting close. Canada, of course, is in the SIC category and has joined the third world in the government debt sweepstakes as was pointed out in the January 21,1995 issue of *The Wall Street Journal* editorial, titled "Bankrupt Canada?"

CHART 1
THE FRASER INSTITUTE SEVERELY INDEBTED
GOVERNMENTS OF THE WORLD—1994



*Identified as severely indebted by the World Bank, but not on *The Fraser Institute SIC List* due to the absence of government debt statistics to calculate the debt-to-GDP ratio.
Source: International Centre for the Study of Public Debt, The Fraser Institute.

TABLE 4
CRITERION FOR CLASSIFICATION

Indebtedness Indicator	Fraser Institute Critical Value
(1) Net-Debt-to-GDP Ratio	≥ 50%
AND ONE OF	
(2) Net-Debt-to-Exports-of-Goods-and-Services Ratio	≥ 275%
(3) Public-Debt-Interest-to-Exports-of-Goods-and-Services Ratio	≥ 20%
OR	
(4) Public-Debt-Interest-to-Government-Receipts Ratio	≥ 15%

CANADA AND THE U.S. COMPARISONS

Debt-to-GDP Ratios

Why is the U.S. not on The Fraser Institute SIC list? Clearly, one reason is that the U.S. net debt to GDP at 39.9% on the SNA measurement basis is still in the 30–50% range, which qualifies a country for the MIC. But the level of debt is only one criterion that we look at in deciding where to categorize a country. Debt affordability indicators, especially the public-debt-interest-to-government-revenues ratio (often called "the interest bite") must also qualify the country to be in the SIC, MIC, or LIC categories. On this score, the U.S. also still qualifies as moderately indebted.

I would like to make a few qualifications here. I have as yet been unable to determine certain other obligations that should be added to the U.S. debt statistics such as the unfunded liabilities of civil service pensions, commitments, and contingencies that may appear in the footnotes of public accounts and the tax-supported net debt of federal, state and local government business enterprises. This latter item is not likely to be proportionately as large in the U.S. as in Canada where there is much more of a tradition and practice of publicly owned enterprises.

The measurement of these items constitute areas for future research. I would like to measure U.S. government debt on a basis comparable to the Statistics Canada FMS and include the other obligations already listed. The federal debt could then be apportioned to each of the 50 states and the District of Columbia so that an overall debt burden could be calculated for every part of the U.S.

Level of Government Comparisons

I am frequently asked why there is all that white space on the world map of severely indebted governments (Chart 1) between Canada and Mexico. My response is that whereas the Canadian and U.S. federal governments have roughly comparable problems, the main difference lies at the provincial and state levels. Table 5 supports this observation. The figures are presented on a public accounts basis (which includes civil service pension liabilities) and are for gross debt, not net debt so that I can calculate the "interest bite" ratio and the debt per capita figures.

Interest bite is interest on the public debt as a percentage of the total revenues of each level of government. It is the main indicator of affordability in the analysis of public debt. Debt per capita is one of the indicators of debt burden that is most readily understood by the general public. The figures are for 1990–91 and 1991–92 since more recent figures are as yet unavailable for U.S. debt data by state and local government.

Table 5 clearly shows that Canada's all-government debt is much higher then U.S. debt and that the major difference lies at the provincial level. The overall interest bite at 19.2% is almost twice as large as the U.S. interest bite at 10.0%. The Canadian federal government had to pay almost 32 cents of every dollar it collected to pay interest on the federal debt. This compares with 16 cents on the dollar for the U.S. government.

Who are the worst and the best provincial/state governments (including local) in North America as far as government indebtedness is concerned? For fiscal 1991–92, the most recent year for which detailed information is available for U.S. state and local governments, Table 6 shows the results for 50 U.S. states, the District of Columbia and ten Canadian provinces on the basis of three indebtedness indicators. Alaska was clearly the

loser in the U.S. rankings; Manitoba was the most indebted Canadian province in that year.

TABLE 5
TOTAL ALL-GOVERNMENT DEBT IN CANADA AND THE U.S.
AND SELECTED INDEBTEDNESS INDICATORS BY LEVEL OF GOVERNMENT
FISCAL YEARS 1990–1991 AND 1991–92*
(PUBLIC ACCOUNTS BASIS, & BILLIONS, UNLESS OTHERWISE SPECIFIED)

Level of Government	1990–91			1991–92		
	Level	Percentage Distributed	Interest Bite	Level	Percentage Distributed	Interest Bite
Canada						
1. Federal	$ 445	63.7%	33.2%	$ 477	62.7%	31.2%
2. Province†	210	30.0	12.9	238	31.3	13.9
3. Local	44	6.3	6.4	46	6.0	6.1
4. Total	$ 699	100.0%	19.6%	$ 761	100.0%	19.2%
5. Gross Debt-to-GDP (%)		104.2%			112.6%	
6. Debt/Capita ($)		$25,263			$ 27,154	
7. Debt/Family of Four ($)		$101,052			$108,616	
United States						
1. Federal	$3,683	80.1%	16.3%	$4,083	80.1%	15.9%
2. States	346	7.5	3.7	371	7.4	3.4
3. Local	570	12.4	6.6	599	11.9	6.1
4. Total	$4,599	100.0%	10.4%	$5,054	100.0%	10.0%
5. Gross Debt-to-GDP (%)		83.3%			88.7%	
6. Debt/Capita ($)		$ 18,491			$ 20,045	
7. Debt/Family of Four ($)		$ 73,964			$ 80,180	

*Gross debt excluding contingent liabilities, commitments, unfunded liabilities of civil service pensions, unfunded liabilities of tax-supported government business enterprises, government loan guarantees, and unfunded liabilities of workers' compensation plans.
†Includes Yukon and Northwest Territories.
Source: Data from Bureau of the Census, Department of Commerce, Government of the U.S., Washington, D.C.; Public Institutions Division, Statistics Canada, Government of Canada, Ottawa, Ontario, Canada; International Centre for the Study of Public Debt, The Fraser Institute, Vancouver, B.C.

Who were the winners? Take your pick in the U.S. list: Ohio, Iowa, or Idaho. None of them was at the top of the more than one of the three indebtedness indicators used. For Canada, Ontario was at the top in 1991–92.

Obviously a lot has happened since 1991–92, and today's winners and losers in the government debt sweepstakes would be quite different from what I have just presented. More work needs to be done in developing an indebtedness index for comparisons within a country and between countries. The index should consist of at least the three indicators I use and perhaps more. Debt statistics should be released on a more timely basis by central government statistical agencies and/or updated, analyzed and published by research organizations such as The Fraser Institute as private funding permits.

TABLE 6
CANADIAN AND U.S. PROVINCIAL/STATE AND LOCAL GOVERNMENT CATEGORY

Indebtedness Indicator	Most Indebted	Least Indebted
	Canadian Provincial and Local Governments Fiscal 1991-92	
1. "Interest Bite" Ratio	Saskatchewan	British Columbia
2. Debt-to-GDP Ratio	Manitoba	Ontario
3. Debt/Capita	Manitoba	Ontario
4. Loser/Winner	Manitoba	Ontario
	U.S. State and Local Governments Fiscal 1991-92	
1. "Interest Bite" Ratio	Alaska, Utah*	Ohio
2. Debt-to-GDP Ratio	Alaska	Iowa
3. Debt/Capita	Alaska	Idaho
4. Loser/Winner	Alaska	Take Your Pick

*Tie
Source: International Centre for the Study of Public Debt, The Fraser Institute, Vancouver, British Columbia, Canada.

Policy Implications

The explanation for the substantial differential in government indebtedness between Canada and the U.S. is therefore to be found largely at the provincial/state and local levels of government. In particular, Canadian provinces have substantially more government debt in relation to the size of their economies than is the case with their American counterparts.

The main reason for this in our view is that in Canada there are only a few legislated constraints on borrowing and fiscal protection such as balanced budget laws and tax and expenditure limitations (TELs). What little legislation exists has only come about in the past few years after the massive buildup of provincial debt through the 1980s.

In contrast to the Canadian situation, 48 out of 50 of the U.S. states have balanced budget laws, and the two that do not, Vermont and Wyoming, operate as if they had such laws in place. Many states have TELs.

As far as debt limits are concerned, a recent study of The Fraser Institute's International Centre for the Study of Public Debt reported that 38 of the 50 U.S. states have them either as a legislated policy to limit debt service or a policy to limit authorized debt, or both. Our conclusion was that: (1) Canadian taxpayers should insist that their governments limit debt service to some percentage of available revenues and (2) Canadian governments should limit authorized debt to either a fixed amount or to some economic or financial indicator.

The first step toward debt reduction is, of course, for governments to balance their budgets. The good news is that at long last this is beginning to happen in Canada. Alberta and Saskatchewan were the first provinces to balance their budgets and produce surpluses in fiscal 1994–95. Six provinces forecast balanced budgets in this year's budgets within the current 1995–96 fiscal year. These provinces are British Columbia, Saskatchewan,

Manitoba, New Brunswick, Prince Edward Island, and Newfoundland. After a deficit this year, Alberta expects a surplus in fiscal 1996–97. Unfortunately, Canada's two largest provinces—Ontario and Quebec—still anticipate large budgetary deficits as does the Government of Canada.

New Brunswick was Canada's first province to introduce a balanced budget law in 1992. Since then, Alberta has adopted legislation as well as a legislated plan to eliminate a portion of its provincial debt over 25 years (the Debt Elimination Act) with annual payments of $350 million and balanced budgets. Manitoba's recently reelected government is pledged to do likewise with legislation that promises to be the strongest balanced budget legislation in Canada (the balanced budget, debt repayment and taxpayer protection legislation). Watch Manitoba to take a leadership role in fiscal reforms in the next few years.

You can also watch Ontario for interesting fiscal developments and a managed attempt to get its debt under control in the coming years in view of the June 1995 massive election victory of the provincial progressive conservatives. Some journalists are already referring to Ontario as "Alberta East."

British Columbia and Saskatchewan have debt reduction plans but have not yet proposed legislation to back it up.

A GENERATIONAL ACCOUNTING APPROACH TO MEASURING THE OVERALL GOVERNMENT DEBT BURDEN

Definition of Generational Accounting

Chris Good will shortly be presenting you with some of the findings of his research in preparing the first set of generational accounts of Canada. I have asked Chris to make a Canada-U.S. comparison using this important new tool for public policy analysis; his information comes from his study titled *The Generational Accounts of Canada*, dated July 1, 1995.

But first, what is generational accounting? It is a relatively new technique of analysis. First introduced in 1989 by Alan Auerbach, Jagadeesh Gokhale, and Laurence Kotlikoff in their paper, "Generational Accounts: A Meaningful Alternative to Deficit Accounting," (in *Tax Policy and the Economy*, ed. David Bradford. Washington, D.C.: National Bureau of Economic Research, 5, 1991, pp. 55–110) these U.S. professors presented an alternative way to using the federal budget deficit to gauge intergenerational policy. The generational accounts try to measure the fiscal burden that current generations are placing on future generations as a result of current fiscal policy.

What generational accounts show is, in present value, the net amount that all current and future generations are projected to pay to the government over the period of their lifetimes. Proponents of this approach claim that it is a better way of measuring intergenerational transfer than the measured deficit.

What can be said for certain is that generational accounts differ fundamentally from cash accounts in that they measure transfers over a lifetime rather than at a given point in time.

There is an important concept that the economists who developed the generational accounting approach called "the intertemporal budget constraint." In its most basic form, this constraint requires that someone pay the governments' bills—be it present generations or future generations, or both. More government spending on current generations will require more payments to the government by future generations.

This formulation of the intertemporal budget constraint highlights the net payments each generation must make to the government. A net payment is defined as the tax an individual pays to the government less the transfers the individual receives. Writing the intertemporal constraint in terms of generations:

Present value of the remaining net payments to the government by existing generations
+ Present value of the net payments to the goverment by future generations
= Present value of government expenditure on goods and services
+ Current government net debt.

The zero-sum nature of the intertemporal constraint is more explicit here. A decline in the tax burden of current generations, given the stream of government expenditure, increases the tax burden of future generations. Similarly, holding the tax bill of existing generations fixed, while boosting current government expenditure, requires either a reduction in future consumption or an increase in the tax burden on future generations. In this way, government debt can be thought of as an implicit tax on future generations.

In addition, the intertemporal budget constraint reveals the damaging effects of current government debt on future prosperity. The larger the current net government debt, given no change in the present value of the net payments of existing generations, the greater the tax burden on future generations, or the less the government expenditure in the future. In effect, a higher current net debt implies a declining standard of living for future generations. Current generations receive a temporarily high standard of living at the expense of future generations who will have to pay the current generations' bills and sacrifice their own consumption.

A Broader International Perspective

Since 1989 there has been much research done in the U.S. and some for Italy, Norway, Japan, Finland, and Germany using the generational accounting approach. An OECD working group did an interesting study in 1993 on the public pension plans of the G-7 countries (also reported in International Monetary fund, *World Economic Outlook*, Washington, D.C., October, 1993: pp. 60).

I included this OECD information in my study from the May 1994 Fraser Forum Critical Issue Bulletin, *Inside Canada's Government Debt Problem and the Way Out* for the following reasons:

1. It uses a generational accounting methodology that allows for new pension entitlements and contributions across generations of beneficiaries;
2. This is the only international comparison of G-7 countries for public pension plans that I am aware of; and
3. The comparison shows clearly the power of generational accounts to analyze and dramatically present the impact of a change in public policy.

What the OECD analysis shows is that the CPP, QPP, OAS, Guaranteed Income Supplement, Spouses Allowance, and Unemployment Insurance Retirement Benefits are in extremely serious trouble in comparison with that of the U.S. (Old Age Insurance, Railroad Retirement, Public Employee Retirement, and Veterans)—Canada's net liabilities, at 250% of 1990 GDP were the highest of any G-7 country, and almost six times higher than the U.S.

All of the major industrialized countries except the U.S. and Japan rely primarily or exclusively on pay-as-you-go public pension systems which are already incurring large deficits—as in Italy and the U.K.—or are expected to do so soon—as in Canada, Germany, and France.

A recent study by the International Monetary Fund (IMF) points out that future pension liabilities depend on the number of retired people relative to the number of people of working age—the so-called "old-age dependency ratio." This ratio is expected to rise sharply in the next twenty years in Canada and elsewhere. The strains that higher dependency ratios will impose on budget policies in the future can be seen by examining the present value of future net liabilities of the pension systems of the major industrialized nations. In all the major industrialized countries, regardless of the system in operation, the present values of net pension liabilities are estimated to be as large as current debt levels, even under favorable assumptions.

The IMF study concludes:

> In the absence of policy adjustments—possibly including increases in retirement age—existing debt levels and unfunded liabilities will continue to grow and will require costly policy adjustments in the future when benefits are paid, in the form of either higher taxes or sharp cuts in expenditures and benefit levels. The projected need for many governments to borrow heavily in the future to fulfill pension obligations clearly reinforces the perception that current budgetary trends are unsustainable [*World Economic Outlook*, Washington, D.C.: International Monetary Fund, October, 1993, pp. 56].

The study clearly shows the positive impact of reducing Italy's unfunded pension liability, assuming the full implementation of the announced increase in retirement age by five years. Net liabilities would be reduced from 233% of 1990 GDP to 101% as a result of this policy decision. But of course this is a broken promise by government though not a legal default.

A Canada-U.S. Comparison

Let me now turn the podium over to Chris Good who will present a Canada-U.S. comparison using the generational accounts approach.

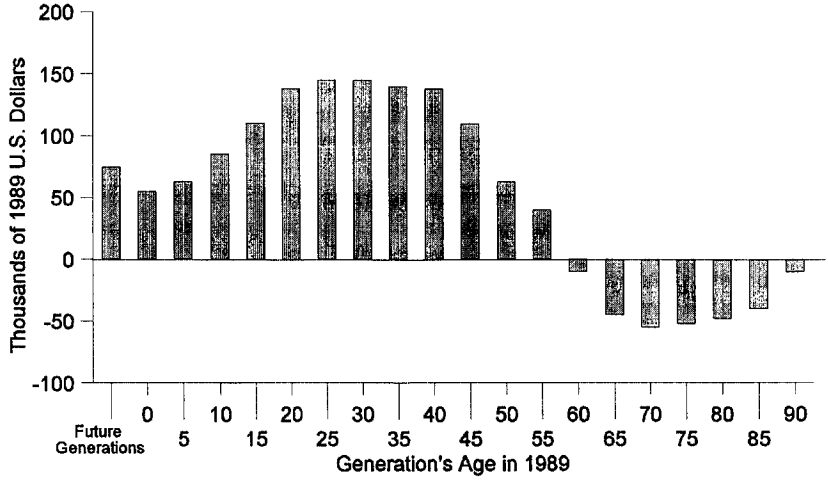
MR. CHRISTOPHER D. GOOD:

U.S. GENERATIONAL ACCOUNTS

Let us begin with a discussion of the generational accounts for the U.S. Chart 2 gives a graphical description of the generational accounts for the U.S. for the base year of 1989 assuming a 6% discount rate and a 0.75% productivity growth rate. The accounts are constructed assuming that government tax, transfer and expenditure policy remains the same in real terms except for annual increases at the rate of productivity growth. Reading the graph is simple. For example, generations born in the base year can expect to pay the

government, in present value terms, 1989 U.S. $56 thousand each. (These dollar values refer to the net payments to government, defined as total taxes, personal and corporate, less total transfers. Thus, net payments of a generation member are equivalent to the government's net income received from that individual.)

CHART 2†
U.S. GENERATIONAL ACCOUNTS 1989*
PRESENT VALUE OF REMAINING NET PAYMENTS (r = 6%, g = 0.75%)



*The generational accounts for the U.S. come from data given in Table 1b, page 78, and Table 2b, page 82 of Auerbach, Alan J., et al. "Generational Accounts: A Meaningful Alternative to Deficit Accounting," in ed. D. Bradford, et al. *Tax Policy and the Economy*, vol. 5. Cambridge, MA: MIT Press, 1991, pp. 55–110. 1993 U.S. Generational Accounts are available in Auerbach, Alan J., et al. "Restoring Generational Balance in U.S. Fiscal Policy: What Will It Take?" in *Economic Review*, Federal Reserve Bank of Cleveland, vol. 31, no.1, 1995.
†Source: International Centre for the Study of Public Debt, The Fraser Institute.

We can see that the generation expecting the greatest future burden to the government comprises those aged 30 in 1989 with a present value net payment burden of 1989 U.S. $144 thousand. Those aged 65 in 1989 are the first generation to become present value net receivers from the government. The value associated with future generations is the expected net payment to the government that must be paid by each U.S. citizen born in 1990 or later. In the U.S., an individual born in 1990 must pay the government 1989 U.S. $75 thousand, with each generation born thereafter paying this amount increased at the rate of productivity growth (0.75%). This is an increase of 34% in the present value net payment burden of the future generation over that of the current generation.

This is an enormous amount of information to absorb. What exactly does it all mean? First, we assume that government expenditure policy remains identical, up to an annual increase equal to the productivity growth rate. So, for example, if the government spent $3,000 per capita on parks in 1989, it will spend that same amount plus 0.75% more per capita next year. Second, we assume that tax and transfer policy remains constant—up to annual increases at the rate of productivity growth—for every

generation alive in the base year 1989. So, if 41 year olds can expect to receive $400 in transfers and to pay $600 in taxes per capita in 1989, 41 year olds in 1990 will expect to receive and pay the same amount plus an additional 0.75%. The present value net payment of a generation refers to the discounted value of all future taxes less all future transfers a particular generation receives given that current tax and transfer policy remains the same (allowing for annual percentage increases at the rate of productivity growth) for the remainder of that generation's lifetime. Third, the future generations figure is the present value that an individual born in 1990 must pay to the government in order for the government to balance its intertemporal budget constraint. This amount increases by the productivity growth rate every year thereafter. For future generations, government expenditure continues to increase at the rate of productivity growth, but current tax and transfer policies become voided. The key in calculating the future generations figure is to ensure that future generations pay enough money to the government to ensure that the government is able to pay all its bills in the long run.

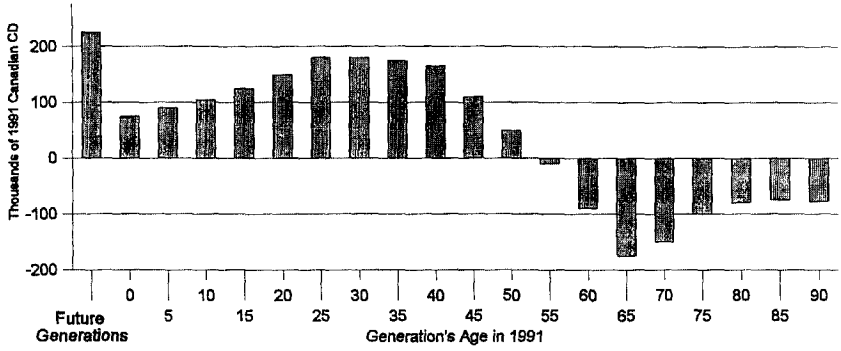
As evidenced on the graph, future generations must pay more to the government than current generations. This implies that the U.S. fiscal policy is currently unsustainable. That is, given current policy regarding government expenditure and given that all those alive in 1989 face current government taxation and transfer policy for the remainder of their lives, the government will require a greater net payment burden from future generations (34% greater than from 1989 newborns) for the government to pay its bills in the long run.

CANADA'S GENERATIONAL ACCOUNTS

Let us now look at Canada's generational accounts (Chart 3). These accounts come from a study I did for The Fraser Institute in the summer of 1994 and are the first of such accounts calculated for Canada. The base year for my Canadian study is 1991 whereas the U.S. generational accounts have a base year of 1989. The discount rate and productivity growth rate assumptions, as well as the manner in which the accounts are constructed, are otherwise identical to the U.S. generational accounts. Notice that while the U.S. generational accounts are dominated in U.S. dollars, the Canadian accounts are denominated in Canadian dollars. Given the international flavor of the audience, I felt it best to appeal to each group separately: U.S. dollar denominated accounts for U.S. data, Canadian dollar denominated accounts for Canadian data.

The Canadian generational accounts show a pattern similar to the American accounts. Newborns in this study's base year, 1991, can expect to be net contributors to the government of 1991 CDN $71 thousand each. As with the U.S. generational accounts, the generation with the greatest present value net payment burden is the 30 year olds; in Canada, 30 year olds have a net payment burden to the government of 1991 CDN $186 thousand each. Those who are 55 in 1991 are the first generation to become net receivers from the government. Each member of the future generations must pay—up to an annual productivity growth increase of 0.75%—1991 CDN $232 thousand if the Canadian government is to balance its intertemporal budget constraint. This increases the net burden on future generations by 227% over the burden on 1991 newborns. This dramatic increase implies that current Canadian government policy regarding taxes, transfers and government expenditure is highly unsustainable in the long run as compared to the U.S.

CHART 3
CANADIAN GENERATIONAL ACCOUNTS 1991
PRESENT VALUE OF REMAINING NET PAYMENTS (r =6%, g =0.75%)



COMPARISON OF THE GENERATIONAL ACCOUNTS OF CANADA AND THE U.S.

The generational accounts for the U.S. and Canada indicate that both countries' government policies are unsustainable. The easiest way to demonstrate this is to compare the change in the net payment obligation of future generations over base year newborns necessary to balance the government's intertemporal budget constraint. Future generations in the U.S. must pay 1989 CDN $88.6 thousand each, an increase of 34% over 1989 newborns who can expect to be net payers of 1989 CDN $65.9 thousand to the government. In contrast, future generations in Canada must be net contributors of 1991 CDN $231.5 thousand per capita to the government, an increase of 227% over the 1991 newborns net payment obligation of $70.7 thousand. Future generations in Canada will owe 161% more than future generations in the U.S. This highlights the severity of the Canadian situation in comparison with the U.S. concerns. This difference stems from a much greater per capita initial debt load in Canada compared with the U.S. and less sustainable fiscal policy in Canada than in the U.S. Put simply, the Canadian government's fiscal difficulties are much more extreme than those in America.

THE NEED FOR FURTHER RESEARCH

Clearly, generational accounting is a powerful technique in the analysis of a country's fiscal health. It allows us to determine whether a government's policies regarding taxation, transfer payments and expenditure are sustainable in the long run. In this way, generational accounting is extremely valuable: failure of the government to balance its intertemporal budget constraint means inevitable bankruptcy. As the data show, current American and Canadian fiscal policies are unsustainable.

This implies an obvious use for generational accounting: to indicate the efficacy of various fiscal policy changes on a government's intertemporal budget. In order to make government policy sustainable, a government has only three options: (1) increase tax receipts from citizens, (2) decrease transfer payments to citizens, and (3) reduce government expenditure. However, there are many ways to implement the various options and each of these techniques depends greatly on what happens in the future. For example, under the more realistic assumptions of a 4% discount rate and a 0.6% productivity growth

rate, government expenditure in Canada (given tax and transfer policies) must fall permanently by 36%. The drop in government spending in the U.S. under similar assumptions will be less than 36%, but I was unable to obtain the necessary data to make the calculation in time for this conference. Generational accounting is a useful tool to evaluate policy changes. Future research should study the effectiveness of various fiscal policy changes in balancing the government's intertemporal budget.

However, generational accounting must be used with care for two reasons. First, as generational accounts look at taxes, transfers and government expenditure from now to the infinite future, the researcher's assumptions regarding growth and discount rates impact the accounts enormously. Second, the best that one can do in terms of evaluating policy with generational accounts is to determine the dollar changes necessary to satisfy the government's intertemporal budget constraint. Statements such as "a permanent 8% increase in labor income taxes is needed to ensure sustainability in government policy" are vacuous. Except for very special cases, changes in government policy cannot be analyzed in a generational accounting due to the interdependent nature of the elements of the economy. Indeed, taxes are distortionary; interest rates change daily; changes in savings rates affect economic growth; and declines in government expenditure temporarily lower output, which diminish tax receipts. Generally, research that attempts to analyze government policy without accounting for the dynamic general equilibrium nature of an economy should be ignored. Generational accounting does not account for these interdependencies. Further research should synthesize the generational accounting and general equilibrium approaches. Overall, generational accounting is a very potent technique that must be implemented and evaluated with care.

I look forward to your questions and discussion on generational accounting and now turn the podium back to Robin Richardson for his concluding remarks.

MR. RICHARDSON: Government debt and the unfunded public pension plans and Medicare are time bombs waiting to explode in both Canada and the U.S. The problem in Canada, however, is that the explosion will be far more devastating for Canada's future generations and will come much sooner than it will for Americans.

To conclude, both Canada and the U.S. have too much government debt. Canada's government indebtedness is much more severe than the U.S. As measured by the interest bite—that is, interest on the public debt as a percentage of total government revenues—Canada's government debt problem is twice as severe as for the U.S. Other measures such as debt to GDP put Canada's problem at from 50% to 70% higher depending on whether gross debt or net debt is used. Debt per capita puts Canada's government debt problem about 35% higher than for the U.S.

Provincial/local per capita debt in Canada is 164% higher than at the state/local level in the U.S. Herein lies a major problem and the basis for a strong case for legislated restraint and limits on borrowing in the Canadian provinces.

When unfunded Social Security including Medicare programs are taken into account, the Canada-U.S. comparisons become even more shocking. The U.S. Social Security program is partially funded; Canadian programs are not. Generational accounting shows that Canada's public debt, taking into account the existing program of future promises for the CPP and QPP , OAS and Medicare, is more than one and a half times as large as in the

U.S. when related to the size of each economy. Fiscal policy including the Canadian governments' promises for its social security system is unsustainable. The same conclusion holds for the U.S. social security programs although Canada will undoubtedly "hit the wall" in its inability to finance existing social security systems and have to make dramatic policy changes sooner.

In this sense, those of you from the U.S. should keep an eye on Canada. We are a leading indicator of things to come in your country if you allow your governments to live beyond their means. Avoid excessive government debt and the problems that come with it.

MR. PAUL M. SAUVÉ: I have a question with regard to the interpretation of your results. I am looking at the Canadian generational accounts table. In my current situation you are showing me to be paying roughly CDN $150,000 present value in excess of what the government will be giving me over the course of my lifetime. Now hold that thought and go to the far left of your table. Is your conclusion that because the future generations are paying CDN $200,000 plus each that it is therefore unsustainable? And if that is the case, should I be reading something into this and saying, I am out of here? Well, basically why is it any more unsustainable because future generations will be paying more than the average if I am myself paying more than the average?

MR. GOOD: That's a good question. It is a matter of interpretation. But the interpretation, given with care, should shed some light.

What the generational accounts show in the graph is the present value net payment burden over the remainder of your lifetime. So the reason a 30 year old shows a much higher net payment burden than, say, a current newborn, is mainly from the fact that right now you are earning lots of money, whereas a newborn will not earn any money for 20 years. And so present value works for a newborn and against you.

Should you be concerned? Well, if you think your net payment to the government is high when you are 30 years of age, then it would be reasonable to compare that figure to the height or the size of the net payment burden for current newborns.

Another way of looking at these accounts is to imagine that the policies are enacted so that each country does fulfill its intertemporal accounts. Then the future generation in, say, the U.S. would have to increase its net payment burden by 34%. The comparable figure for Canada is 227%. You can imagine the rest of the account building up much higher, and so as soon as you enact that policy, the rest of the accounts, that is, those accounts for existing generations, will build way up. So if you think you are bad off at 30, you will be worse off under a policy that balances the intertemporal constraints.

MR. SAUVÉ: I am heading to the Bahamas. Actually no, I am trying to slot the chart into a light that many of us are more used to talking in. For example, consider the CPP contribution rate or something like that where you are talking absolute dollars instead of present value. That is the angle a lot of us come from. Am I able to read into these numbers whether I am paying more dollars each year of my working life than someone else would be? I am trying to understand your conclusion that the situation will be unbearable to this individual in a future generation. And that it will be any more unbearable than it is to me over the course of my lifetime.

MR. GOOD: Sure. Let us just imagine that Canada was to continue going as is. So we continue with the tax and transfer policies that we are working with and the government expansion policy that we are working with and just keep on going.

Well, what is going to happen then is that we will not only keep the government debt that we have currently built up, but also it will build and build until the point where the amount of tax revenue that the government is able to extract from its citizens will be unable to cover its interest payments. That is literally "hitting the wall," and then we are broke as a country.

Now you can get into arguments regarding the importance of foreign debt versus domestic debt. Generational accounts make no differentiation between foreign and domestic net debt. We assume in the generational accounting framework that you have to pay off your debt whoever you owe it to. You cannot just stiff your citizens or foreigners.

In terms of how life will be under a policy that balances an intertemporal constraint, I do not like to present the accounts in terms of changes in, for example, the CPP contribution rates, and so on. Generational accounts that work with fiscal policy changes like that and that talk about changing tax rates and so on should be evaluated very carefully. This is because of the effects that these tax rates and changes would actually have on the economy. Usually these studies do not adequately take into account the interdependent aspect of the economy.

One thing I do in my study is calculate net tax rates where I take a look at the present value of expected labor income. I calculate the present value tax burden to get some sort of percentage figures.

And again you see net tax rates in Canada of about 50% for current newborns, and these rates having to go up to well over a 100% of present value wage income in the future. So it will not be pretty. It will be difficult to remedy Canada's fiscal burden, but it can be done.

Also in my study I refer to a "freeze and growth through productivity" policy. This policy says let us freeze government expenditure and let us freeze transfers to individuals at their current real per capita values. But it allows governments to increase taxes at the productivity growth rate of the economy each year.

Such a policy of "freeze and growth through productivity" would be tremendously successful in enabling Canada to work its way out of its fiscal woes. That whole policy is gone over in my forthcoming study (*The Generational Accounts of Canada*, International Centre for the Study of Public Debt, The Fraser Institute, forthcoming) in detail.

MS. KELLEY MCKEATING: I am curious about how you calculated the net payments. When you are looking at the benefits received by a taxpayer, what did you include in that? There are intangible benefits that are hard to put a dollar value on. Did you try to do that?

MR. GOOD: This is part of the effort in calculating generational accounts. The government expenditure refers to government expenditure on goods and services. So the major components of that are health and education, police protection, fires, and so on. The

transfer payments refer to social security, the unemployment insurance payments, CPP, and so on. So that is how I break it up.

How do I actually break up and calculate these accounts to determine the present values? Well, what I use is a microdata sample of a panel of household expenditures from Statistics Canada as analyzed by The Fraser Institute that goes into how much benefit and cost Statistics Canada receives from a whole variety of categories of different transfer payments and expenditure payments.

So the generational accounts are complex to calculate in the least. And future research will try to tighten that down a little more. But generally the government expenditure deals with physical or tangible goods and services. And the transfers are items like the unemployment insurance, CPP, and so on.

MS. MCKEATING: I am wondering if you have done any of these studies across income and wealth classes as well as age?

MR. GOOD: It seems to me one of the interesting dynamics is that as you increase the debt burden, not only does the poorer section get transfer payments, but the wealthier section gets the benefit of high real interest rates. And if politicians correctly calculate that the present value of the future taxes is low because the wealthy are older, it seems to me that the politicians are going exactly where the votes are, because the people under 18 do not have a vote.

And so it seems like our political systems are generating the result that you would expect, which is, to transfer money to where the voters are. And also I think that the political dynamic of whether you will see decreases in benefits or increases in taxes depends on how at each age you know where in the income class you are and the implications for the future.

FROM THE FLOOR: I guess your last comment is the good news. The bad news for me is that I was 25 in 1989 so I feel like I hold the U.S. on my back. The good news is that I am a property owner in Idaho, and so we have the lowest per capita debt for that state, so I get some of each.

It seems to me that this is the political dynamic of how each person sees his or her particular position. You know, one way to avoid taxes is just not make any money, which is maybe why some of the younger generation has avoided working for a while.

The last thing I am wondering is that it seems like the real question is, are these investments paying off in real terms? In other words, if the real increase in the productivity of government debt is above the real interest rate you are paying, then it's a good deal for the government to borrow money.

My question is that, if this is not true, why is it that all, or almost all, of these governments have substantial debt? Especially all the industrial countries have substantial debt. So where is the balance between it being a bad thing and being a good thing? In other words, if you have an economy where you do not take care of people, you could have a balanced budget. We also may not have an economy. So where is the trade-off between keeping

people working and consuming as much as possible by giving them money and balancing your budget?

And the last point, in case you really have time, would you tell us what happened to the Argentinas of the world? What would happen if Canada decided to adopt a high inflation approach and just said, basically we will start all over on our debt. You know, we will have inflation until the government debt bill does not mean anything, and then we will put in a new tax and benefit policies.

MR. GOOD: All right, I will take the beginning points on generational accounting, and Robin Richardson will answer your other questions. First of all, I should point out again my definition of sustainability. In terms of generational accounting, the word *sustainable* implies that a government is balancing its intertemporal budget constraint. In terms of a country that is not balancing its intertemporal budget, the important question becomes "what policy or policies would allow the country to balance its intertemporal budget." This policy set is then referred to as "sustainable policy."

Some examples are what would happen if tax rates were to increase dramatically, or taxes were cut? What would happen if the government just decided to eliminate its commitment to health care? These polices are sustainable technically, but are they acceptable to its citizenry? Generational accounting certainly does not take this into account. The political acceptability of the solutions proposed is going to be one of the major challenges in getting a country back on a suitable path. This is especially true for a country like Canada, which is so far off its intertemporal budget balance.

Your point regarding looking at shifts of wealth between households over generations, and so on is very good. Future research should certainly be focused towards that.

Looking at the shifts between households and different wealth levels is very important. The underlying assumption with these accounts is that these are expected present value net payment obligations. At present, I have used the average person. Clearly the effect on taxes and transfer changes on people of different income and wealth levels will be dramatically different. It would be very interesting, for example, to calculate generational accounts for different income deciles. I appreciate the point.

MR. RICHARDSON: I will attempt to answer the last two points that you raised. One is how did we get into this government debt problem?

In Canada the problem really developed in the early to mid-1970s; that is more than 20 years ago. Its root cause was excessive government spending. First of all, the politicians were able to get away with borrowing since the public was unaware, by and large, of the implications of excessive government debt.

The politicians were able to do this to satisfy various insatiable demands from different parts of society for different things, including retirement, Medicare, and other aspects of our welfare society.

Providing government services with borrowed dollars has finally come home to roost, so to speak. In Canada at the federal government level, the current debt is about $550 billion. But the growth in the federal debt from 1984 to 1994 was just over $300 billion. All of

this increase was interest compounding on interest. So the first ten years from 1974 to 1984 resulted in putting Canada into a debt trap where the interest compounds and gets worse and worse.

Canadian governments are finally being forced by financial constraints to cut back. They are not doing it because they want to. They are being forced to cut spending by the large and rising interest bite into their available revenues.

The same dynamics of how Canada got into its government debt problem is basically true in other countries. It comes down to the politicians' inability to say "no" to never-ending requests for more spending. That is why I feel legislative restraints are a good idea if we can have them introduced for different levels of government with tough penalties for noncompliance.

You spoke of Argentina. Argentina at the beginning of this century had one of the highest standards of living in the world. Now it has dropped way down the list.

Argentina had financial difficulties that in part resulted from the root problem: excessive spending leading to excessive borrowing. And it attempted to inflate its way out of the problem. So did some other South American countries, and there are other examples as well. We have not seen that yet in Canada and the U.S. I hope we never do. Hyperinflation only creates other problems.

Argentina is still a severely indebted government of the world. It is on The Fraser Institute's List SIC, which we publish every year. Argentina has had restrictive measures forced on its country by the IMF and the World Bank. Selling off government-owned enterprises is part of the program of reducing Argentina's still excessive government debt.

So when you get into a severe problem, you want to avoid these kind of enforced solutions. But financial markets and the IMF will force them upon you if you do not take earlier action. We hope to avoid that in Canada.

FROM THE FLOOR: I understand that these are net present value of future items. One interesting thing that is not calculated is over an individual lifetime. What are the people who are born in 1964 in the U.S., for example, actually worth on this measure compared to the people born in 1934? I guess that may be related to that first question.

MR. GOOD: Yes, it would be very interesting to have lifetime tax rates. I refer you to the Auerbach study. The U.S. has data to allow it to calculate the lifetime tax rates. And those lifetime tax rates are calculated in some of the U.S. studies.

In Canada the data were not available. That is why I ended up in my own study calculating net tax rates over the remainder of one's lifetime; that is, remaining lifetime income. But certainly having the net tax rates over a lifetime would be useful. The problem with the way the generational accounts appear is that it looks as if those age 65 are strong net receivers from the government over the remainder of their lifetime. And they may feel that they spent a lot of years working and paid a lot of taxes. And now they will say, "These generational accounts make me look like I am taking much out of the government trough as opposed to really calculating my lifetime net tax payment incomes." So this

represents the truth from now on. But certainly net lifetime tax rates do even up the tax burden on different generations.

MR. ANTHONY L. RENDER: I admit to being pretty uneducated on the Canadian tax system. But I understand that there is no inheritance tax in Canada. In the U.S. we have an inheritance tax. And I guess as we all get older that will be a big concern.

I was wondering on the intergenerational question in particular, if mechanisms such as inheritance taxes or perhaps a new inheritance tax that is not as yet in place, could be analyzed from the consideration as to whether or not there is a method of redistributing the income and wealth back to where it would have been in the first place? This relates to the question we just had. Am I paying more over my lifetime than someone else? Well obviously that can be evened up, when we all pass into the next life.

Maybe you can give me your thoughts on whether there is a mechanism that can help even things out in the long run?

MR. GOOD: Well, regarding the inheritance tax in a generational accounting framework, that would not affect the generational accounts, given the assumptions under which the accounts have been constructed. Why is that? That is because everything is taken back in present value terms.

One thing with generational accounts, such as the accounts we have discussed is that they are calculated under the standard assumption, which is to freeze tax and transfer policy for the current generation and then make the future generation born next year deal with it.

And just to highlight the difference in the intertemporal constraint. Clearly if things like inheritance taxes or different taxes are added, then this will affect the intertemporal budget of a government. So, do not take the accounts as verbatim. This is not going to be exactly the way the future unfolds. It is there to highlight the unsustainability of a government policy.

You are quite right that inheritance taxes would split the burden across generations. And as such, it will flatten up the frequency of it somewhat. This would cause the future generation's burden to decline. So you are quite right. Absolutely.

FROM THE FLOOR: I am noticing your map of severely indebted governments of the world. You had New Zealand down as one of the SIC countries. And you mentioned that it would no longer qualify for that category. I imagine that's largely attributed to the actions of the IMF a few years ago and the crisis that New Zealand had there. Do you have any parallels between what happened in New Zealand and what might happen in Canada? And what impact did that have on the people? And is it really such a bad thing, and how does that affect their lifestyle today?

MR. RICHARDSON: New Zealand hit the wall in 1984. *Hit the wall* is a term used to describe its financial crisis. There was a period, a very short period, where nobody in the world was buying New Zealand bonds. That was a severe financial crisis. But New Zealand also had a change in government around that time. And a conservative national government was replaced by a more socialistic labor government.

New Zealand in 1984 had excessive debt that was built up over a number of years. These things do not happen overnight. The country had other problems, too, in terms of subsidies, highly subsidized sectors in the economy, and protected sectors. The labor government took an across-the-board approach, removing all subsidies. That was one of the things the government did. It was not forced to do this by the IMF. It was a response to financial market pressure and changed political circumstances.

The New Zealand government removed subsidies to the farmers, which are a very important part of New Zealand economy. Subsidies were removed on businesses and everything else that was getting a subsidy. All of this happened on the same day. This was one of the important lessons that New Zealand learned. It was done strategically. After a couple of weeks of complaints and even marches on Wellington, things settled down. I had a chance to speak to Sir Roger Douglas who was the Finance Minister at the time. He said that the government's public opinion polls showed that it settled down quite a bit after a few weeks. Everybody was unhappy at having lost their subsidies, but they grudgingly felt it was necessary and fair in the sense that they recognized the financial crisis, and no particular sector was singled out over another sector.

The reason New Zealand is still on The Fraser Institute SIC List is that over that ten-year period since 1984 the government did a lot of privatization of state-owned enterprises (they call it *corporatization* in New Zealand). In order to make these entities saleable, the Government of New Zealand had to take a lot of the debt of state-owned enterprises onto the books of the government. Consequently the government's debt remained high in relation to the size of the economy. But it has been coming down in recent years, and New Zealand will be off the SIC List in 1995.

New Zealand is one of the strongest economies right now as we speak in the OECD countries. It is now more than ten years after the 1984 financial crisis. New Zealand has had its ups and downs with three elections in between. And the labor government is no longer in there. It is interesting, however, that by doing the right thing in 1984, which was really tough, the electorate reelected labor a second time. It lost in the next election to the national party. But the national government continued on with the same kinds of policies that labor introduced back in 1984.

So New Zealand has 11 years of fairly good government policies in an overall sense. And now it has one of the strongest economies in the industrialized nations and is off The Fraser Institute SIC List. There are a lot of lessons to be learned for Canada. For the U.S., too. And that is that you need to take firm action to address the deficit and debt problem and stick with it. And even though there are political risks to doing the right thing, the wrong thing is to procrastinate and go back to the way that you were before and get more into debt. That will only hurt everybody more. So I think there is a lot to be learned from New Zealand.

MR. ROBERT E. COLLINS: If there are earlier generations that have taken out more than they have put in, they have imposed a greater burden on later generations.

It depends a great deal whether these earlier generations actually consumed it or whether they accumulated it. To the extent that they did not consume it, but rather accumulated it, items such as the state taxes or succession duties come into play. Even if they did not consume it, of necessity that generation has to leave it to the next generation. Eventually

they all die off. So it goes to the next generation whether you tax it or not. It's just a question of when.

But another way of getting at it is to use inflation to get out of it. It might be interesting to run the same type of model you have here letting inflation be the variable and maybe you do not have to go the full debt load of 50% or a 100%. Maybe there's some inflation rate where that debt load ends up at zero. And obviously a higher rate than 6%.

MR. GOOD: Well, two points. First of all, you were saying in the actual case that perhaps the future generation value would be best if it was zero. What we would expect from the country that is currently balancing its intertemporal budget is for the future generation's burden to be identical to the current newborn's burden.

So if those two left-most bars in Charts 2 and 3 were of the same height, then everything would be fine. If the future generations were actually lower than that, we would expect the country to actually be running an intertemporal surplus, which implies that all that extra taxation and such that has occurred need not have been there. And so the amount we lost associated with that tax has actually hurt the economy.

Maybe in terms of being best off we would hope the bars to be equal. Regarding the assumptions of inflation, the discount rate here is assumed to be a real discount rate. So inflation is not involved in any of these calculations.

A 6% real interest rate may appear quite high. I believe it is quite high. The reason you see 6% rates before you is because that is the standard interest assumption using the American accounts. And so to aid and facilitate the comparison of the account I used a 6% assumption. In my own studies I check out interest rate sensitivity at 2–4%, which were more reasonable long- term real interest rates.

Again, how sensitive is the calculation to inflation? Not at all. Because inflation doesn't come into a generational account; it deals with real payments. To the extent the changes in the inflationary expectations may adjust the real interest rate, it is quite sensitive. As I mentioned in my talk, my caveat regarding generational accounting is that the accounts are quite sensitive to the selection of the discount rate and the productivity growth rate.

So, you are quite correct that the discount rate changes with time and it does affect the accounts. At a very low real discount rate of 2% the increase in present value net payments of future generations is enormous. It absolutely explodes.

So, if anything, what you are seeing before you is the best case scenario in terms of debt. Lowering the discount rate implies that all the debt, or all of the excess of government expenditure over the net payments that government receives gets built way up in the future. And so the future generation burden is really very substantial.

So the short answer is, yes, they are quite sensitive to your discount rate. And the lower the discount rate, the worse off things look.

FROM THE FLOOR: I have two questions and they are both pretty simple.
If it is all right for a government to run a deficit within the generational accounting framework, then when would it run a surplus? And the second question is, have you

measured the Canadian total government debt? Do you have any measurements of Canadian total government debt plus personal savings or debt? And what type of positive/negative numbers would that be?

MR. GOOD: To answer your first question, it is absolutely all right to run a deficit in the generational accounts. All we require is that in the long run you pay everything off.

An intertemporal budget constraint does not get upset if you run a deficit this year, so as long as you run a larger surplus next year. So a country that is currently running a deficit will have to run many surpluses in the future to get rid of it.

So it is all right to be running a deficit as long as you run larger surpluses later. To this extent, when politicians have started to discuss balancing your budget, that is something that does not need to be done at any particular year in an intertemporal framework. What does need to be done is large surpluses in the long run. In fact, right now in Canada it would be unacceptable for Canada, if tomorrow the budgets would become balanced, to continue to be balanced for the now to the infinite future because we have to start paying off the principal and the current net debt that we have. This calls for surpluses.

So not only do we need balanced budgets, but also we need budget surpluses, and of a substantial enough magnitude in order to clear out our debt. Regarding your comment on present day government expenditure, whether it's in excess or whatever, what you want to know actually is the total unfunded liabilities. For example, it would be interesting to know what would be excess of the present value of government liabilities over that of the present value of the government's net income. This is net payments to governments from you and I under the assumption that current tax and transfer policy remains unchanged for the rest of time and government expenditures stay constant in real terms except for an increase in line with the rate of productivity growth.

And I actually have that figure. Under our assumption of the 6% discount rate and 0.75% annum productivity growth rate, the total unfunded liabilities in Canada equals $1.2 trillion. In other words, if we clear our accounts now and wind everything up, we would have to pay a $1.2 trillion fee in order to continue our standard of living, that is, given our present tax transfer and expenditure policy from now to the end of time.