C.D. Howe Institute
Institut C.D. Howe

Communiqué

Embargo: For release *Thursday*, November 27, 1997, at 10:00 a.m.

Big debt paydown means big budget payoff, says C.D. Howe Institute

Ottawa should pay down some of its nearly $600 billion in debt with large budget surpluses during the current Parliament, says a *C.D. Howe Institute Commentary* released today.

With a balanced budget in prospect for the current fiscal year (ending March 31, 1998), the fiscal plan in next spring's budget should target surpluses rising to the $15 billion range in four years' time, say the authors. Such large debt paydowns would set the stage for sizable tax cuts and program increases early in the next century, and still put Canada on the road to a much smaller federal debt burden in time to meet the demographic challenge of the baby boomers' retirement in 20 years' time.

The paper, entitled *Out Front on Federal Debt Reduction: Programs and Payoffs*, was written by William Robson, Senior Policy Analyst at the C.D. Howe Institute and William Scarth, professor of economics at McMaster University and an Adjunct Scholar of the Institute.

The authors argue that cutting the federal debt from its current level of around 70 percent of Canada's gross domestic product to 20 percent would lower Canadian interest rates, help insulate Canada from turmoil in world financial markets, and — most important — prepare a fiscal cushion for Canadians' living standards against the drop below trend that will otherwise occur when the baby boomers leave the labor force. A fifty percentage point drop in the debt ratio would provide a double--barreled payoff: a fiscal dividend as lower interest payments make room for new programs or tax cuts, and a further bonus of new programs or tax cuts as the budget moves from today's balance to the ultimate small deficit that is consistent with a stable lower debt ratio. Robson and Scarth estimate the ultimate payoff at over $6,000 per family of four in today's money.

The authors argue that the best strategy is a “front--loaded” plan that, like the debt--reduction program which followed World War II, makes the biggest debt paydowns in the early years. Leaving the bigger efforts for later in the program, along the lines envisioned in the federal Liberals' “Red Book,” is not credible, because this would imply years of belt tightening followed by a sudden binge once the lower debt target was hit — not a program on which any government would be likely to follow through. A front--loaded plan, by contrast, would make big enough gains at the outset to allow a gradual move toward the ultimate small deficit, with no credibility--destroying binge. Economic modeling also suggests that a front--loaded program

that made progress while the economy was expanding would provide more flexibility for dealing with potential weakness in the economy further along.

Robson and Scarth also ask whether the path to lower debt would be easier with tax rates held at current levels, or with lower taxes and corresponding reductions in program spending. They argue that lowering taxes would likely boost the economy and create jobs, but they note that the difference between the high--tax and low--tax strategies is small compared with the payoff from debt reduction. For this reason, they conclude, disagreements over the relative places of tax cuts and spending increases ought to take a back seat to the first priority of rapid debt pay--downs. They note, for example, that allowing federal taxes to grow in line with the economy and holding increases in program spending per Canadian to the rate of inflation would create budget surpluses big enough for a strongly front--loaded program of debt reduction. The result, they argue, would be sizable payouts of lower taxes and new programs as early as the next Parliament, along with progress toward a demographically prudent debt ratio in 20 years' time.

* * * * *

The C.D. Howe Institute is Canada's leading independent, nonpartisan, nonprofit economic policy research institution. Its individual and corporate members are drawn from business, labor, agriculture, universities, and the professions.

-- 30 --

For further information, contact: Bill Scarth (905) 525--9140, ext. 23807
Bill Robson;
Maxine King (media relations), C.D. Howe Institute
phone: (416) 865--1904; fax: (416) 865--1866
e--mail: cdhowe@cdhowe.org
The full text will be available on the Internet at: http://www.cdhowe.org/eng/pr/new.html.

Out Front on Federal Debt Reduction: Programs and Payoffs, C.D. Howe Institute Commentary 100, by William B.P. Robson and William M. Scarth (C.D. Howe Institute, Toronto, November 1997). 24 pp.; $6.00 (prepaid, plus postage & handling and GST — please contact the Institute for details). ISBN 0--88806--422--5.

Copies are available from: Renouf Publishing Company Limited, 5369 Canotek Road, Ottawa, Ontario K1J 9J3 (stores: 71½ Sparks Street, Ottawa, Ontario, phone: 613--238--8985; 12 Adelaide Street West, Toronto, Ontario, phone: 416--363--3171); or directly from the C.D. Howe Institute, 125 Adelaide Street East, Toronto, Ontario M5C 1L7.

C.D. Howe Institute
Institut C.D. Howe

Communiqué

Embargo: à diffuser le *jeudi* 27 novembre 1997 à 10 h 00

Un remboursement important de la dette équivaut à un gain important pour le budget, affirme l'Institut C.D. Howe

Ottawa devrait consacrer ses excédents budgétaires au remboursement de la dette, qui atteint presque 600 milliards de dollars, et ce durant la législature actuelle, indique un *Commentaire de l'Institut C.D. Howe* publié aujourd'hui.

Vu la possibilité d'un budget équilibré au cours de l'exercice financier en cours (lequel se termine le 31 mars 1998), le plan financier du budget du printemps prochain devrait viser des excédents qui atteindraient les 15 milliards de dollars dans quatre ans, indiquent les auteurs. De telles réductions de la dette ouvriraient la voie à de considérables diminutions d'impôt, ainsi que des hausses de programme au début du siècle prochain, pour permettre au Canada de se retrouver avec un fardeau considérablement allégé de la dette fédérale, à temps pour relever le défi démographique que posera la retraite des baby--boomers dans 20 ans.

Le document, qui s'intitule *Out Front on Federal Debt Reduction: Programs and Payoffs (En première ligne pour la réduction de la dette fédérale : les programmes et les gains*), a été rédigé par William Robson, analyste de politique principal à l'Institut C.D. Howe, et William Scarth, professeur d'économie à l'Université McMaster et attaché de recherche à l'Institut.

Les auteurs affirment que la réduction de la dette fédérale de son niveau actuel qui est de 70 % du produit intérieur brut, à 20 % de celui--ci, permettrait de réduire les taux d'intérêt canadiens, protégerait le pays contre les hauts et des bas des marchés financiers mondiaux, et — plus important encore — doterait le niveau de vie des Canadiens d'un tampon financier contre la chute qui se produira autrement, une fois que les baby--boomers quitteront la population active. Une réduction de 50 points de pourcentage du ratio de la dette procurerait un gain à double effet : un dividende fiscal, découlant de la réduction des paiements d'intérêt qui laisserait la place à de nouveaux programmes ou des réductions d'impôt, et une prime supplémentaire de nouveaux programmes et de réductions d'impôt avec l'évolution du budget, de son montant actuel, au déficit éventuellement modeste qui serait cohérent avec un ratio réduit et stable de la dette. MM. Robson et Scarth estiment le gain éventuel à plus de 6 000 $ par famille de quatre personnes en dollars courants.

Les auteurs soutiennent que la meilleure stratégie consiste à suivre un plan de « remboursement initial » qui, tout comme le programme de réduction de la dette qui a suivi la Deuxième Guerre mondiale, comporte les remboursements les plus importants de la dette au

début. Le plan qui consiste à remettre à plus tard les efforts les plus importants, comme l'indique le « Livre rouge » des Libéraux fédéraux, n'est pas plausible, car il fait appel à des années de vache maigre suivies d'un excès soudain une fois l'objectif de réduction de la dette atteint — un programme qu'il est improbable qu'un gouvernement suive. En revanche, un plan de remboursement initial permettrait de réaliser suffisamment de progrès dans les débuts pour permettre une évolution graduelle vers un déficit éventuellement modeste, dépourvu d'excès destructeurs de plausibilité. Les modèles économiques suggèrent également qu'un programme de remboursement initial qui marque des progrès dans un contexte d'essor économique, fournira la souplesse nécessaire pour remédier aux faiblesses éventuelles qui pourraient survenir par la suite.

MM. Robson et Scarth se demandent également si le chemin qui mène à une réduction de la dette serait plus aisé si l'on gardait les taux d'imposition aux niveaux actuels, ou si l'on réduisait les impôts avec des coupures correspondantes des dépenses de programme. Ils soutiennent que la réduction des impôts favoriserait l'essor économique et la création d'emplois, mais que la différence entre la stratégie des impôts élevés et celle des impôts bas est peu importante par rapport au gain découlant de la réduction de la dette. Pour cette raison, concluent--ils, les désaccords concernant l'ordre relatif des réductions d'impôt et des hausses de dépenses devraient être subordonnés à une priorité, qui est celle des remboursements rapides de la dette. Ils remarquent par exemple, qu'en permettant à la hausse des impôts fédéraux d'être alignée sur l'essor économique et en limitant toute augmentation des dépenses de programme par habitant au taux d'inflation, on obtiendrait des excédents budgétaires suffisamment importants pour un programme de remboursement initial de la dette. Selon eux, le résultat produirait des gains importants en matière de réduction des impôts et de nouveaux programmes dès la prochaine législature, ainsi que des progrès en matière d'un ratio de la dette démographiquement prudent d'ici 20 ans.

* * * * *

--30 --

Renseignements : Bill Scarth (905) 525--9140, poste 23807
Daniel Schwanen; Maxine King (relations avec les médias)
Institut C.D. Howe
téléphone : 416 865--1904; télécopieur : 416 865--1866
courrier électronique : cdhowe@cdhowe.org
Internet : www.cdhowe.org/fr/pr/new.html

Out Front on Federal Debt Reduction: Programs and Payoffs, Commentaire n^{o} 100 de l'Institut C.D. Howe, par William B.P. Robson et William M. Scarth, Toronto, Institut C.D. Howe, novembre 1997, 24 p., 6,00 $ (les commandes sont payables d'avance, et doivent comprendre les frais d'envoi, ainsi que la TPS — prière de communiquer avec l'Institut à cet effet). ISBN 0--88806--422--5.

On peut se procurer des exemplaires de cet ouvrage auprès des : Éditions Renouf ltée, 5369, chemin Canotek, Ottawa ON K1J 9J3 (librairies : 71½ , rue Sparks, Ottawa ON, tél. 613 238--8985 et 12, rue Adelaide Ouest, Toronto ON, tél. 416 363--3171), ou encore en s'adressant directement à l'Institut C. D. Howe, 125, rue Adelaide Est, Toronto ON M5C 1L7.

Out Front on Federal Debt Reduction:

Programs and Payoffs

by

William B.P. Robson
and
William M. Scarth

Shrinking the federal debt burden relative to Canada's economy offers a key payoff: a fiscal dividend as lower interest payments make room for new programs or tax cuts, plus a further spending or tax bonus as the budget moves from today's balance to the small deficit that is consistent with a steady (lower) debt ratio. To prepare a cushion against the hit that the baby boomers' retirement would otherwise deliver to Canadian living standards, Canada should cut the debt from today's level of 70 percent of gross domestic product to 20 percent over 20 years — a program offering an ultimate payoff, expressed in today's money, of around $6,000 annually per family of four freed up for new program expenditures or tax cuts.

The best route to such a target is a front-loaded one, with the biggest debt paydowns in the early years. Front loading is credible, unlike plans involving prolonged belt tightening followed by a binge as the budget swings from surplus to deficit after the 20 percent target is met. Front loading would produce early declines in interest rates, making later debt paydowns easier and, if economic modeling is any guide, boosting output. And front loading would make early progress when the economy is strong, providing a cushion against leaner times later on.

Economic modeling of two front--loaded plans, one emphasizing tax cuts and the other spending increases, shows a bigger payoff with tax cuts, but the difference is small beside the payoff of debt reduction itself. The tax-versus-spending debate should not, therefore, pre-empt the introduction of a fiscal plan that targets sizable surpluses — reaching about $15 billion by the end of the current Parliament. Such surpluses would cut the federal debt ratio sharply, promising a fiscal payout as early as the next Parliament, and a demographically prudent 20 percent debt ratio in 20 years' time.

Main Findings of the Commentary

- Reducing Ottawa's debt burden — the ratio of net federal debt to Canada's gross domestic product (GDP) — offers a two-part budgetary payoff. A fiscal dividend of new programs or tax cuts becomes possible as interest payments fall. A further bonus of new programs or tax cuts emerges as the budget moves from debt-reducing surpluses to the small deficit that is consistent with a stable lower debt ratio.
- The various criteria for choosing a long-term debt target all point to a debt-to-GDP ratio that is much lower than today's 70 percent and generally suggest a target in the 20 percent range. In particular, preparing a budgetary cushion for the hit on Canadian living standards threatened by the baby boomers' retirement points to a debt-to-GDP ratio of 20 percent achieved over 20 years as a long-term goal.
- Given middle-of-the-road assumptions about economic growth and inflation, cutting the debt-to-GDP ratio to 20 percent would yield a payoff equivalent to 4.2 percent of GDP. That would be a fiscal dividend from lower interest payments of 3.4 percent and a further bonus, as the budget moves from today's balance to a deficit consistent with a stable 20 percent debt-to-GDP ratio, of 0.8 percent of GDP — around $6,000 annually per family of four in today's money, which could be used either on new program spending or on tax cuts.
- Three types of paths lead to a lower debt-to-GDP ratio. A *back-loaded* plan would see the largest budget surpluses at the end of the 20-year period. Devoting a fixed share of future declines in the interest-payments-to-GDP ratio to debt reduction, in the spirit of promises the federal Liberals made in their election campaign "Red Book," would produce this result. A *constant-surplus* plan would involve steady budget surpluses throughout the period, like most mortgages. Finally, a *front-loaded* plan would make the biggest debt paydowns in the early years, similar to the policy followed in the years immediately after World War II.
- The back-loaded and constant-surplus plans lack credibility: they require a lengthy period of belt tightening, followed by a binge as the budget goes from surplus to a 0.8 percent deficit in year 21. The temptation to uncork the champagne too early and abort the plan would probably be overwhelming, especially for a government whose preference for lax fiscal policy made such a plan attractive in the first place. The front-loaded plan, by contrast, is credible: big early debt paydowns would allow a gradual approach to the 0.8 percent deficit, with no credibility-destroying binge lurking at the end.
- An investigation of these plans using a model of the Canadian economy further highlights the attractiveness of a front-loaded strategy. If lower debt means lower interest rates, front loading makes each successive year's target easier to hit and boosts the economy as well. Bringing economic cycles into the picture shows how big debt paydowns in the early years, when the economy is strong, provide a cushion against possible weakness later on. In general, rigid annual deficit ratio targets do not destabilize the economy.
- A final model simulation compares a front-loaded plan in which the fiscal dividend earned by debt reduction is reflected in tax cuts with one in which it is reflected in spending increases. The comparison favors the lower-tax approach, but the difference is small relative to the overall payoff from debt reduction. For this reason, debt reduction emerges as the first priority for the next round of budget-making, with tax cuts versus spending increases being a significant, but second-order, choice.
- A front-loaded plan would involve surpluses rising to the $15 billion range by the end of the current Parliament — achievable by, for example, keeping the tax-to-GDP ratio roughly constant and holding program spending per Canadian steady in real terms. Such surpluses would cut the federal debt-to-GDP ratio sharply, promising a sizable payout as early as the next Parliament, along with a demographically prudent 20 percent debt-to-GDP ratio in 20 years' time.

Over the past three years, net interest on outstanding federal debt has averaged about $40 billion annually — over $5,000 per family of four — absorbing nearly one in three dollars of tax revenue.[1] This burden is a huge obstacle to either increased program spending or tax cuts. The current Liberal government has addressed this problem with a set of deficit-reduction targets that have brought Canada to the brink of a balanced federal budget for the first time in a generation. This *Commentary* takes a long look ahead by sketching out some budget priorities that might usefully pre-occupy Ottawa during the next generation and by saying something about how those priorities might be reflected in the next series of budgets.

The first step in addressing this topic is to look at the arithmetic of debt reduction. In particular, we focus on the lower government interest bill that smaller debt produces — which we consider the only reasonable definition of a "fiscal dividend"[2] — and on the additional bonus that arises as fiscal policy adjusts to a budget balance that is consistent with a sustained ratio of debt to gross domestic product (GDP), rather than one that constantly aims to reduce it. We then canvass some criteria that bear on the debt level Canada might aim for and when it might be achieved. We conclude that a 20 percent debt-to-GDP ratio, reached over 20 years, would prepare a cushion for the impact that the baby boomers' retirement will otherwise have on Canadian living standards.

Having identified a tentative target, we then look at various paths for achieving it:

- a "back-loaded" strategy similar to the one that appears to underlie the federal government's current strategy, in which the largest budget surpluses appear late in the program;
- a "constant-surplus" strategy framed around a budget surplus that remains steady as a share of GDP through the program; and
- a "front-loaded" strategy, in which the largest budget surpluses appear early on.

A preliminary evaluation focusing on political credibility suggests that the front-loaded strategy is superior since only it avoids 20 years of belt tightening followed by a sudden massive spending increase or tax cut in year 21 — not a program likely to be followed through to its conclusion in real life.

We then use a simple model of the Canadian economy to compare the performance of the back-loaded, constant-surplus, and front-loaded strategies in the presence of economic cycles and various feedbacks between the budget and the economy. The front-loaded strategy performs well in these simulations, for two main reasons. First, if faster federal debt reduction lowers Canadian interest rates, the debt-reduction exercise itself becomes less painful and the stimulative effect of lower interest rates on investment helps economic growth — at least temporarily. Second, faster debt reduction early allows less stringent policy in the face of possible softness in the economy later on.

Finally, we ask how a program that "dividends out" each year's anticipated interest payment decline in tax cuts compares with one in which tax rates remain constant. Our conclusion, which is necessarily tentative given the uncertainties about the economic effects of various potential changes in taxes and spending, is twofold. First, a program of lower taxes is probably superior. Second, however, the difference between those two programs is small compared with the payoff of a large debt reduction. In short, disputes about the division of the fiscal dividend are of distinctly second-order importance compared with the need to reduce debt in the first place.

We conclude by urging the federal government to make rapid paydown of debt, rather than large tax cuts or big new programs, the centerpiece of fiscal strategy in its upcoming budget. Keeping both the ratio of taxes to GDP and program spending per Canadian in real terms roughly constant, for example, would likely yield budget surpluses in the $15 billion range by the end of this government's mandate. This looks like a tall order, but it is a challenge worth meeting. It would yield a rapidly growing fiscal dividend through the next mandate, allowing Ottawa to cut taxes, increase program spending, and even cushion the effects of a potential downturn in the economy, all while maintaining progress toward a much lower debt burden by the time the baby boomers retire.

Earning the Fiscal Dividend

At about 5 percent of GDP, net interest payments on the federal debt are roughly the same now as they were when the Chrétien government took office in 1993. This constancy in the ratio of interest payments to GDP is the result of offsetting forces. GDP has grown, pushing the ratio down. The average interest rate on federal debt has remained roughly unchanged, with overall declines in market interest rates partially offset by a rebalancing of the composition of federal debt in favor of longer-term issues (which, though less exposed to market swings, are usually more expensive to service). And the debt has increased each year by an amount equal to the annual budget deficit: from fiscal year 1993/94 to 1996/97, the cumulative increase was about $75 billion, pushing the ratio of net debt to GDP up from 71.3 percent to 73.1 percent.[3]

With the budget now near balance, however, a falling debt ratio is in prospect. Even if, on average, the budget were only balanced during the coming years, the debt would stay constant. Barring further major reductions in Ottawa's average interest rate, the net interest bill would stay roughly the same. But since GDP will continue to grow, the ratio of interest payments to GDP will shrink.

This lower interest burden can be thought of as a modest fiscal dividend — a useful term to describe the combination of program spending increases and tax cuts that becomes possible as interest payments shrink relative to Canada's national income. If budget surpluses were to pay down the dollar amount of the debt, the decline in the ratio of interest payments to GDP would be more rapid and the fiscal dividend would be larger.

The Long-Term Rewards of Lower Debt

The potential rewards from a strong debt-reduction program are enormous. Before turning to timing and other issues, consider the basic arithmetic of interest payments and budget balances.

At the end of the current fiscal year (1997/98), the federal debt-to-GDP ratio will be almost exactly 70 percent. At the government's current average debt-service cost of 6.8 percent, a debt burden that big imposes an annual interest bill of 4.8 percent of GDP. What if the debt ratio were to fall by fifty percentage points to 20 percent — the target debt ratio we defend later in this *Commentary*? The interest-payments-to-GDP ratio would fall, even with unchanged interest rates, to 1.4 percent — a saving equal to 3.4 percentage points of GDP. Scaled to current GDP — roughly $835 billion — this saving would amount to a dividend of over $28 billion every year in today's money.

The ultimate payoff from a lower debt ratio is larger yet. Pegging the debt-to-GDP ratio at a constant level means that, on average, debt must grow at the same rate as GDP. Debt will grow at that rate if the deficit-to-GDP ratio is equal to the growth rate of GDP times the debt ratio. With an average growth rate for nominal GDP of 4 percent,[4] maintaining a 20 percent debt ratio would therefore involve an average annual deficit ratio of 0.8 percent: in today's money, an additional $6.7 billion to apply to increased spending or tax cuts. For perspective, this total payoff of 4.2 percentage points of GDP amounts to about $35 billion in today's money — more than half of gross federal personal income tax collections. In short, a major effort to reduce the debt ratio would produce a huge reward: room in the federal budget for sizable new programs and/or tax cuts.

Less ambitious debt reduction would, naturally, yield a smaller reward. In general, the long-term payoff is the dividend — the long-term decline in the ratio of interest payments to GDP from its current level — plus the eventual increase in the deficit ratio from its current level (of zero). As just noted, with the 20 percent debt ratio target, these two items would be 3.4 and 0.8 percentage points, respectively: a total of 4.2 percentage points of GDP. A twenty-five percentage point reduction in the debt ratio, to 45 percent, would yield 1.7 and 1.8, respectively: a total of 3.5 percentage points of GDP. Less ambitious debt reduction would thus result in less room for more spending or lower taxes.[5]

These calculations illustrate a fundamental point, that the recent debate about a three-way split of the fiscal dividend — among debt paydown, tax cuts, and spending increases — is misleading.[6] The "split" approach suggests that anything used to satisfy one objective would be unavailable for satisfying the others. On the contrary, however, debt re-

duction does not compete with tax cuts or spending increases; rather, it is what makes them possible.

Making a decision on the long-term target debt ratio, therefore, logically comes before making a decision on the question of tax cut versus spending increase. Accordingly, we turn next to the debt target.

Setting a Long-Term Debt Target

As with most questions of economic policy, four considerations bear on the choice of a debt target: macroeconomic stability, microeconomic efficiency, equity, and political feasibility. Naming a precise figure involves some arbitrariness. Nevertheless, a canvassing of these criteria suggests an ultimate debt ratio that, at somewhere around 20 percent, is much smaller than now exists, and gives some notion of a time frame over which to seek it.

Macroeconomic Stability

Considerations of macroeconomic stability suggest evaluating a debt target for its likely effects on the volatility of government finances and on the general level of interest rates.

The volatility issue is straightforward. Consider, for example, a two percentage point increase in the average effective interest rate Ottawa pays — not an implausible result of, say, a flight to quality in world financial markets as a result of turbulence in Europe or Asia, or a renewed bout of anxiety about Quebec secession. With a debt ratio of 70 percent, such an increase would push the federal deficit up by almost one and a half percentage points of GDP (some $12 billion); with a debt ratio of 20 percent, the corresponding increase would be less than one-half of a percentage point. A smaller debt would expose Canadians less to such shocks and increase the government's ability to steer a steady course in its affairs.

Because interest rates vary with perceived credit quality and government borrowing costs tend to set a benchmark for other creditors, potential effects on interest rates need to enter any consideration about debt targets. It is tempting to see the general decline in Canadian interest rates since fiscal retrenchment began in earnest as evidence that such effects are large and immediate. Other factors, however, are also in play: growing confidence in the durability of low inflation over the longer term, stimulative monetary policy in the short term, and an abatement of concern about the immediacy of Quebec separation.

The best estimate of the independent influence of debt levels on interest rates puts the effect of a fifty percentage point reduction in debt on interest rates somewhere between one and a half and two and a half percentage points.[7] Such a change could lead to large changes in living standards. Even a sustained drop of just one percentage point in interest rates could increase capital investment enough to produce a long-term benefit equal to about two and a half percentage points of national income.[8] These considerations lend support to a rather low target for the debt ratio.

Microeconomic Efficiency

What of microeconomic efficiency? Although some debt is justifiable on the basis that the federal government makes investments in long-lived assets, Ottawa's stock of fixed assets is tiny, amounting to less than one-twentieth of its debt.[9] We therefore focus on debt that is used to finance spending on current consumption.

Traditional economic analysis sees taxes as distorting the signals of relative value and scarcity that are otherwise conveyed in market prices. From this perspective, less debt is better than more since lower interest payments permit lower taxes. Taken to its logical conclusion, the ideal would be a large enough positive net worth (negative debt) for the government to cover all its program costs with no taxation at all. Since total federal program spending (including programs delivered through the personal income tax system and not shown in the budget) is about 14½ percent of GDP, Ottawa would, if it could earn the same return on its assets that it currently pays on its debt, need a stock of net assets more than twice as big as annual GDP to finance itself with no taxes[10] — an interesting thought, but not one that will preoccupy Canadians for a few years to come.

Potentially pointing in the opposite direction are arguments stressing that government borrowing allows individuals whose only "wealth" is the

present value of their expected future labor income to borrow in the absence of more conventional collateral. This view sees government debt as correcting for private lenders' inability to pool the risks associated with human capital, making some debt desirable. Economic models that compare these competing sources of distortion suggest that the optimal debt ratio is about 60 percent, but that this result is of no importance at the applied policy level since even *very* large departures from the estimated optimum have effects on social welfare that are almost unmeasurable.[11]

In short, the literature on debt and microeconomic efficiency offers no practical guide to setting a precise debt target, but does generally suggest that lowering debt would more likely help than hurt.

Equity

Equity-oriented criteria yield less ambiguous judgments. Building up and paying off debt involves lowering and raising national saving, transferring consumption from future generations to those currently alive, and back again.[12] Over many decades, an implicit contract between generations appears to have developed in Canada as in all developed countries. Each generation enjoys higher living standards as a result of previous cohorts' saving and, as it ages, makes a similar investment in the living standards of its successors.

There have been exceptions to this pattern. For example, the national debt ran up by about twenty percentage points during the Great Depression and by some sixty percentage points during World War II. Particularly in the latter case, this decision seems unremarkable since the postwar generation inherited a priceless asset — freedom — along with the debt, and immediately set to work running a series of sizable budget surpluses to push the debt and the debt ratio back down. By using variations in the national debt to provide a short-run cushion in the face of major shocks, these episodes allowed society to spread the cost of the shocks across generations to some degree, actions likely consistent with most Canadians' view of intergenerational equity.

The more recent runup in the federal debt ratio — from less than 20 percent in the early 1970s to the 70 percent plus figures of recent years — amounts to a breaking of this implicit intergenerational contract. Perhaps this was unintentional. After all, many people assumed at the time that the slowdown in productivity growth in the early 1970s would be temporary, and had grown used to experiencing interest rates that were lower than growth rates — in retrospect a somewhat unusual historical situation — making extra consumption today at no cost to tomorrow appear possible. In any event, accidental or not, there was no analogue to depression or war to justify this dissaving.

A major event that might warrant a debt-mediated smoothing of consumption across generations — the aging of the baby boomers — does look likely in a couple of decades' time. When the boomers retire, the share of the population that is in the labor force will fall by about 10 percent, pushing average living standards below where they would otherwise have been. A flexible debt policy could smooth out this "hit" by running the debt ratio up while the baby boomers are retired and working it back down after they are gone. But this option will not be available if the excesses of the past 25 years have not been worked off before the baby boomers retire.

How much debt reduction would Canada need to lay the ground for a subsequent upward push in debt arising from the boomers' retirement? Using an overlapping-generations model of the Canadian economy, Scarth and Jackson conclude that the government debt ratio would have to fall by about fifty percentage points to just keep full-equilibrium living standards from falling below where they would otherwise be in the face of this increase in the elderly dependency ratio.[13] This investigation assumes that households are forward looking and, in the absence of government action, would save significantly for the additional person-years of retirement that are coming. If individuals do not plan this completely for the future, however, the budget adjustment would be understated. A fifty percentage point reduction in the debt ratio — achieved within the next 20 years — would therefore seem a modest application of the intergenerational equity criterion.

Political Feasibility

Political feasibility is perhaps the most difficult criterion to discuss. On its face, reducing the debt ratio from 70 to 20 percent over 20 years looks hard. As we discuss in the next section, the average budget surplus over the period would, assuming 4 percent nominal GDP growth, need to be close to 1 percent of GDP — $8 billion in today's money, and a far cry from recent experience. Yet, as alluded to above an even more dramatic reduction has occurred within many Canadians' living memory: immediately after World War II, a series of sizable budget surpluses (averaging 2.7 percent of GDP) drove the debt ratio down by more than fifty-five percentage points in only five years — from more than 103 percent in fiscal year 1946/47 to less than 47 percent in 1951/52. Even though productivity growth is now slower than the rates Canadians enjoyed immediately following the war, an effort of that magnitude makes a 20-year reduction to 20 percent look relatively mild.

In Praise of Hard Debt Targets

Some people might object that this focus on debt targets puts fiscal policy wholly at the service of one objective. What about using fiscal policy to help buffer economic cycles, letting the "built-in stabilizers" operate, or giving the economy a discretionary boost when times are hard and letting out some of the steam when it is overheated?

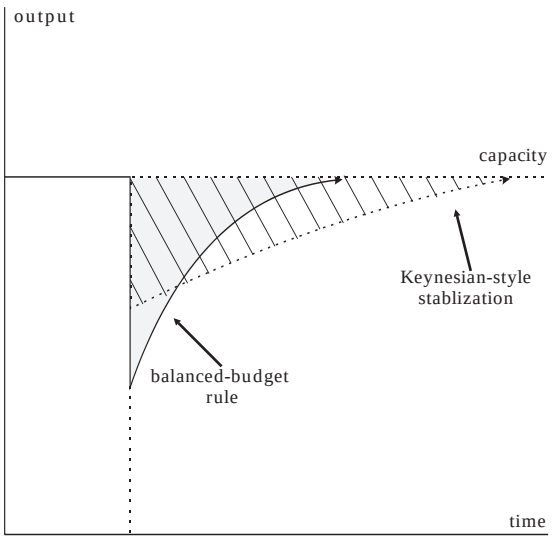
Traditionally, discussions of fiscal policy have tended to emphasize the proposition that government should balance the economy, not just the budget, over the longer term, by letting the debt ratio rise temporarily during recessions. Although we make allowances for these Keynesian effects and policy decisions in our simulations later on, this concern is fundamental enough to deserve a comment up front. Given our emphasis on the potential use of debt policy to smooth the effects of long-term shocks — such as war, depression, or major demographic events — across generations, there is no reason to dismiss the use of debt policy to smooth out other shocks — such as those that cause short-run business cycles. In several important respects, however, the traditional emphasis on cycle smoothing has not fared well in recent years.

To begin with, today's fiscal problems have resulted, at least in part, from the selective application of traditional advice: deficits during the recession half of each cycle, but no surpluses during the booms. Further, even if the productivity-growth slowdown of the mid-1970s had been recognized for the long-term phenomenon that it was and if cycle-smoothing policy had been implemented more even-handedly, it might not have achieved the hoped-for effect. Both theory and empirical studies have suggested problems with the concept of Keynesian stabilization.

For one thing, policies that appear to be stabilizing in a static analysis, in which time plays no part, can be destabilizing in a dynamic context that allows for the lags in collecting taxes and disbursing money and those in private sector responses.[14] Traditional analyses of built-in stabilizers do not allow for a rigorous treatment of wage and price adjustment or for explicit modeling of the dynamic connection between deficits and debt. Taking account of the need to pay down debt after a recession, for example, and of how this need slows the overall speed of adjustment for the economy makes the tradeoff between the short-term benefit and the longer-term cost of the fiscal buffer less clear than once thought.

Consider, for example, a sudden one-time drop in demand that, in the presence of sluggishly adjusting wages and prices, causes firms to cut output and employment (the solid line in Figure 1). A government that balances its budget in every period will likely exacerbate the downturn by either cutting expenditures or raising taxes right away. Higher unemployment and rising inventories then push wages and prices down, which, in turn, stimulates demand and draws output gradually back to capacity. If the government allows the budget deficit to rise in response to the drop in demand, the initial drop in GDP is less (the dashed line in Figure 1). The subsequent need to repay the resulting debt, however, means that the adjustment back toward capacity is slower. Even before considering the possibility of risk premiums associated with changing debt levels, then, it is possible that the total output and employment loss — the depth of loss multiplied by the time it lasts (the hatched

Figure 1: ***Output Stability under Alternative Fiscal Policies***



area in Figure 1) — will be greater than under the balanced-budget regime (the shaded area in Figure 1).[15] Because the literature on this topic is limited, we provide a rational-expectations analysis of rigid versus flexible budget-balance rules in Appendix A. This material verifies that the possibility just discussed is, in fact, highly relevant. We consider this matter further in later sections of the *Commentary*, when we make allowance for some Keynesian cycle smoothing in the simulations. We conclude that it is appropriate to give primacy to debt reduction in setting annual deficit ratio targets.

Choosing a Path

Setting a long-term debt target and a time frame for achieving it are but two steps in the process of getting from here to there. Equally important is the path chosen to reach the goal. To keep the discussion manageable, we describe just three contrasting approaches. In general terms, a plan can be back loaded, leaving the bulk of the reduction for late in the period. Or it can be evenly loaded, with constant budget balances throughout. Or it can be front loaded, with the biggest surpluses and the fastest progress in reducing the debt occurring in the early years.

Back-loaded, constant-surplus, and front-loaded plans differ in their credibility. Consider, for example, three alternative time paths for the federal deficit-to-GDP ratio consistent with getting from a 70 percent debt ratio to a 20 percent ratio over a 20-year period. For simplicity, the calculations that follow assume that nominal growth rates (just over 4 percent annually: 1.5 percent labor force growth, 0.5 percent productivity growth, and 2 percent inflation) and interest rates (6.8 percent annually) are not affected by fiscal policy.

A Back-Loaded Plan

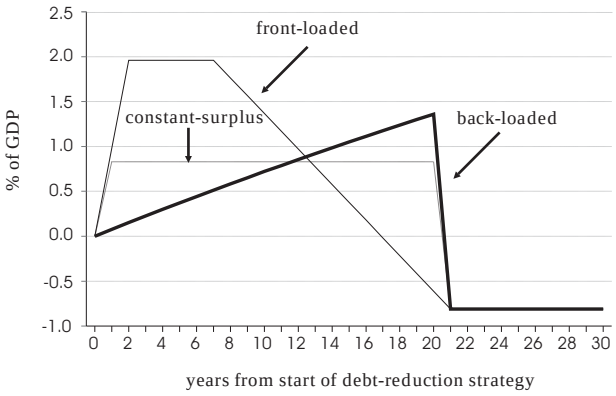
A plan that reinvests a fixed proportion of the fiscal dividend in debt reduction amounts to one that is highly back loaded. (See Box 1 for a clarification of how this option compares with the government's announced intention.) Plugged into this strongly stylized environment, such a plan is illustrated by the heavy rule in Figure 2. The budget would show an increasingly large annual surplus — reaching almost 1.4 percent of GDP in the twentieth year. Once the 20 percent target was achieved at the end of that year, the balance would shift to a deficit of 0.8 percent of GDP. This rapid shift, however, puts the

Box 1: ***The Back-Loaded Plan and the Red Book***

A back-loaded plan with surpluses equal to a fixed proportion of the fiscal dividend superficially resembles the federal Liberals' "Red Book" commitment,* but varies in three key respects. First, the Red Book appears to define the fiscal dividend as the budget surplus, emptying the concept — and, therefore, its allocation among spending hikes, tax cuts, and debt reduction — of all meaning. Second, getting to a 20 percent debt target in 20 years requires an annual budget surplus amounting to some 40 percent of cumulative interest savings, not the roughly 25 percent hinted at in the Red Book. Finally, and more positively, the government's fiscal plans involve a combination of prudent forecasts and a contingency fund that, together, provide more front-loaded debt reduction than would a plan based on a simple fixed proportion of the dividend.

* See Liberal Party of Canada, *Creating Opportunity: The Liberal Plan for Canada* (Ottawa, 1993).

Figure 2: ***Budget Balances Using Alternative Debt-Reduction Paths, as a Percentage of GDP***



credibility of the program in doubt. Particularly since a back-loaded plan would be adopted in the first place by a government that was overeager for a payoff, one suspects that, as the end of the period neared, the political temptation to move back into deficit before the last year would be extreme. But changing the plan before year 21 would abort the debt-reduction program. And, since the baby boomers will age right on schedule, missing the debt-reduction target would undermine the rationale for the initiative.

A Constant-Surplus Plan

A constant-surplus plan is more like a typical mortgage. It involves moving to a budget balance ratio that, if maintained over the 20-year period, would achieve the 20 percent target by the end of it — in this example, a surplus of just over 0.8 percent of GDP (the dashed line in Figure 2).

Similar to the back-loaded strategy, however, the constant-surplus approach involves a sudden, albeit somewhat less dramatic, switch to a 0.8 percent deficit in year 21. Thinking of the homeowner who, anticipating the paying off of a mortgage in the near future, begins to run up credit-card debt, one wonders if the temptation to move toward deficit before year 20, thus missing the target, would not prove irresistible.

A Front-Loaded Plan

A front-loaded strategy could avoid this longer-term loss of staying power. Suppose, for example, that the government were to move quickly, in two equal annual jumps, from a budget balance this year to an annual surplus of almost 2 percent of GDP in two years' time and maintain that surplus for six years (the light rule in Figure 2). This front loading would kick-start the debt reduction, allowing the budget balance to approach the long-run target of a 0.8 percent deficit more gradually. This is perhaps the most important point we want to make in this *Commentary*. The front-loaded strategy would reach the 20 percent debt target over the same time period (the debt-to-GDP ratios produced by the three strategies are shown in Figure 3), but because there would be no sudden binge to tempt the government to abort the project before it reached the target, the front-loaded plan would be credible in a way that its back-loaded and constant counterparts would not.

Some Preliminary Evaluations

As noted at the outset, all three plans would yield an eventual payoff equal to 4.2 percentage points of GDP. They vary considerably, however, when it comes to the experience along the way.

The back-loaded plan, in which the largest debt

Figure 3: ***Federal Debt-to-GDP Ratios Using Alternative Debt-Reduction Paths***

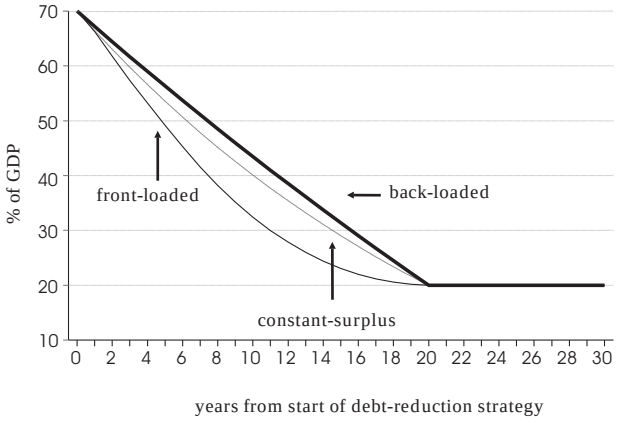
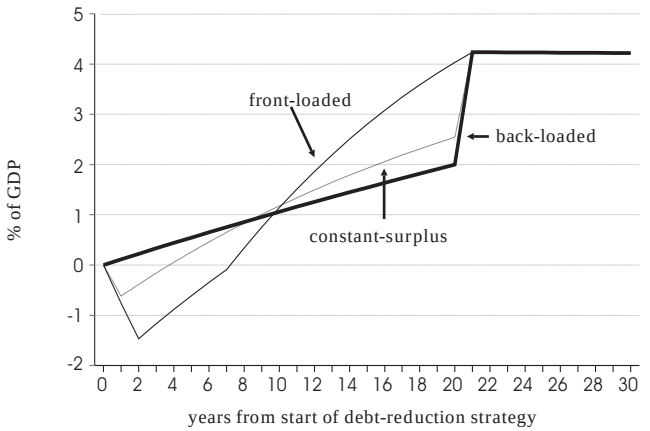


Figure 4: ***Payoffs from Alternative Debt-Reduction Paths, as a Percentage of GDP***



The back-loaded plan, in which the largest debt paydowns occur late, would allow more new spending or tax cuts early on — hence its immediate political attractiveness. The cost of this early fiscal ease, however, would be only modest debt reduction in the early years and an equally small fiscal dividend in the form of lower interest payments. With limited help from lower interest costs and the need to run steadily larger budget surpluses as time goes by, the back-loaded plan would yield a payoff that would grow very slowly (the heavy rule in Figure 4). It would amount to less than one-half of 1 percent of GDP by the end of the fourth year and would continue to show subdued progress before the binge in year 21. To repeat, a government attracted by the back-loaded plan because of its reluctance to hold the line on spending increases or to resist tax cuts in early years would be unlikely to resist bringing that binge forward, thus aborting the plan.

The constant-surplus plan (the dashed line in Figure 4) would involves a larger sacrifice early on, with no payoff until the fourth year. Thanks to a somewhat faster-growing fiscal dividend and no need for further enlargement of the budget surplus, the subsequent rise in the payoff would be better than under the back-loaded plan. Again, however, the striking binge in year 21 raises the suspicion that policymakers would yield to a temptation to crack open the champagne too early, putting the debt target out of reach within the 20-year period.

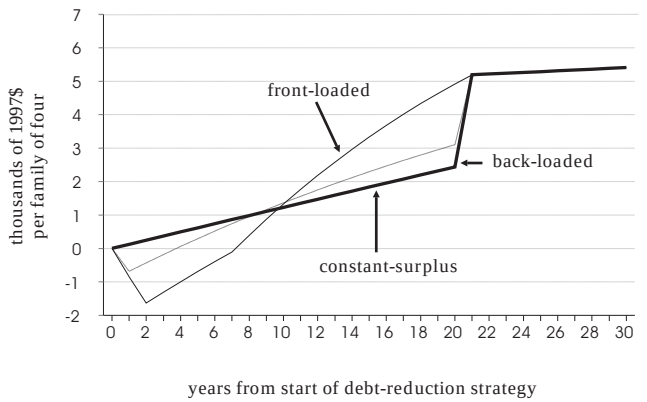
The front-loaded plan (the thin rule in Figure 4) would require greater sacrifice during the first half of the period. Indeed, the total payoff would be negative through the first four-year period, as all of the fiscal dividend and then some was reinvested in debt reduction. The rewards would arrive, however, in the latter half of the period. The payoff that would come in a credibility-destroying final binge in the other plans would, in fact, come forward in time in the front-loaded plan, which would allow a much smoother increase in program spending and/or tax cuts as the 20-year period reached completion. With a front-loaded plan, almost the full payoff could be enjoyed before year 21 without putting the debt target at risk.

All of the many different ways to implement a front-loaded plan have the unpleasant characteristic of delaying the distribution of the fiscal dividend. They also, however, have the commendable characteristic of producing much more rapid declines in the debt ratio than their back-loaded and constant-surplus counterparts. Because the payoff would grow rapidly once the initial sacrifice was made, no credibility-destroying binge would tempt policymakers to prematurely end or postpone the program.

Moreover, front-loaded plans have a historical precedent. The debt paydown that followed the end of World War II was strongly front loaded: the bulk of the progress occurred during the first two years, when budget surpluses averaged more than 4 percent of GDP. Given the power of compound interest, this front loading powerfully boosted the debt reduction of the late 1940s and early 1950s, to the enormous benefit of Canadian living standards during the later 1950s and 1960s.

The stylized figures presented in this section give some notion of the lower taxes or richer programs promised by further fiscal consolidation. To prepare for a fuller examination of their consequences for the federal budget, especially when we start to allow for interactions between the budget and the economy, it helps to recast the payoffs in dollars adjusted for inflation and population growth. Doing so, as in Figure 5, gives a readier sense of both the sacrifice involved in the early years of the programs and the payoff later. It also

Figure 5: ***Payoffs from Alternative Debt-Reduction Paths, in Dollars per Family of Four***



imparts a slight upward tilt to the lines, reflecting the fact that productivity growth raises the value of a unit of GDP gradually over time (by 0.5 percent per Canadian each year in these examples).

Adding Complications

This is about as far as the basic arithmetic of deficit and debt dynamics can take us. To go further, we need a model that brings in complications such as changes in interest rates and economic cycles, and that attempts to capture some of the effects of federal budgetary decisions on the behavior of households and businesses, the resulting changes in national saving and foreign transactions, and the feedback from these variables to the budget.

Fuller details of the model we use to trace some of these effects are provided in Appendix B. For a preliminary look at the way the three debt-reduction strategies might interact with the broader economy, two features merit mention here.

First, in the model, the federal government sets its overall course by targeting the debt-to-GDP ratio, making fiscal adjustments to achieve its targets at annual intervals. It sets its desired budget balance to hit the desired year-end debt ratio (after allowing for the effects of expected economic growth on the ratio), decides what proportion, if any, of the anticipated fiscal dividend (that is, the anticipated decline in the ratio of interest payments to GDP) to give in tax cuts each year, and adjusts program spending as required.[16]

Second, the federal budget affects the private sector directly in several ways. Interest payments and transfers are part of the income households use to finance their purchases of goods and services. Federal spending on goods and services reduces household spending on goods and services by 50 cents on the dollar (reflecting an assumption that government spending is valued by households — so much that half of such spending is a substitute for private consumption).[17] And, of course, federal taxes reduce household income.[18]

To get a glimpse of how the model functions before other aspects of the economy — such as interest rate changes and economic cycles — come into play, Figure 6 shows the payoffs, in 1997 dollars per family of four, involved in the back-loaded, constant-surplus, and front-loaded strategies. Except for some annual wiggles, which reflect some delays in the reaction of fiscal policymakers to the economy and to their own success in hitting targets in the model, these pictures are essentially identical to those produced by the simple arithmetic of deficits and debt — with growth and interest rates unaffected by policy — shown in Figure 5.

Buying Insurance

With this snapshot taken as a base for comparison,

Figure 6: ***Payoffs from Alternative Debt-Reduction Paths, in Dollars per Family of Four***

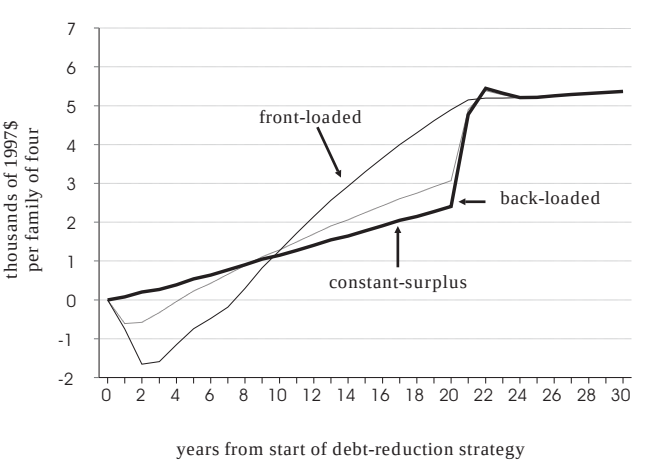
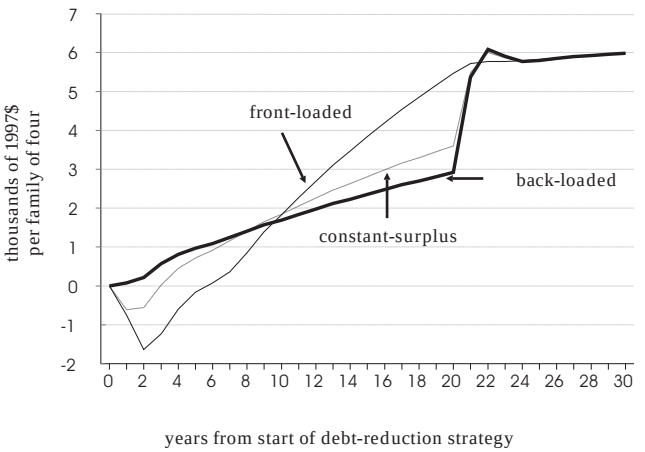


Figure 7: ***Payoffs from Alternative Debt-Reduction Paths with Interest Rate Premiums, in Dollars per Family of Four***



it is possible to get a more complete look at the three debt-reduction plans as they might play out in a setting where changing interest rates and economic cycles can affect the outcome. To this end, it helps to extend the model in two ways.

Interest Rates

First, we allow for the level of the federal debt and Canada's international debt to foreigners to influence interest rates. In line with empirical studies, we assume that every one percentage point drop in the stock of either type of debt lowers interest rates by two basis points. This change affects not only the government's debt-service costs, but also economic growth — at least in the short run — by stimulating (or discouraging) new capital formation as the cost of new investment to firms declines (or rises).

Introducing interest rates into the mix produces the payoffs shown in Figure 7. Two conclusions emerge from this simulation.

The first point is that, if lower debt does bring lower interest rates, the payoffs of debt reduction are larger, regardless of the timing of the reduction plan. A lower average interest bill makes the budget balances required under all three approaches achievable with either lower taxes or higher spending. Also, if lower interest rates stimulate output, the debt-reduction programs raise living standards as well, yielding payoffs that are larger, in real dollars per person, than under the assumption that debts do not affect interest rates.

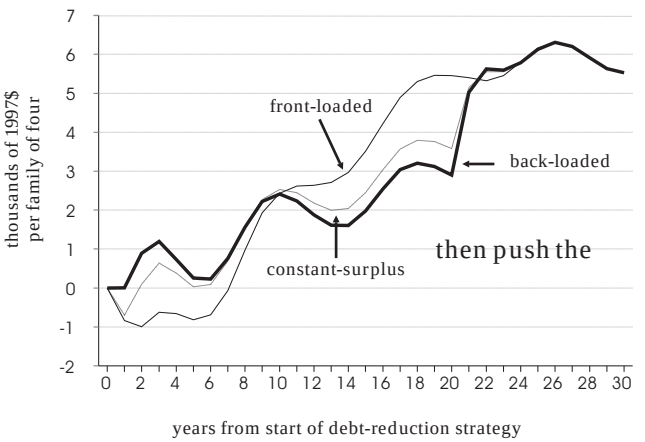
The other key point is that taking account of the likely impact of lower debt on interest rates and the feedback of lower interest rates on the budget and the economy makes the front-loaded plan more attractive. Faster debt reduction brings the interest rate gains forward in time. The front-loaded approach therefore involves less sacrifice than in the previous illustration: the period during which the payoff is negative (the short-term pain) shrinks by about one and a half years, and the comparison with the constant-surplus and back-loaded plans during the second four years is less bleak. Correspondingly, the positive payoff comes forward in time. (Since the ultimate reduction in interest rates is the same under all three approaches, the long-term payoff is still the same. The constant-surplus and back-loaded plans reap it more slowly, however, since in this model seeing is believing: policymakers get no credit for debt reduction until it actually happens.)

Economic Cycles

The second extension allows for economic cycles. Canada is currently enjoying a long-awaited upswing in demand after a prolonged period of sub-potential growth. Although business cycles are notoriously difficult to forecast, it appears likely that the Bank of Canada's stimulative monetary policy over the past year or so will continue to support the economy well into 1998 and perhaps beyond.

As an illustration, we allow for this above-average growth in the near future and a period of below-average growth later on by adding a demand cycle to the model. To produce swings consistent with the length of actual business cycles that are symmetrical around the Canadian economy's potential over the long term, we make the cycle eight years in length; we make it push the economy two percentage points above its long-term potential at the peak of the cycle two years from now, and

Figure 8: ***Payoffs from Alternative Debt-Reduction Paths, with Interest Rate Premiums and a Business Cycle, in Dollars per Family of Four***



economy two percentage points below its long-term potential path six years from now.[19]

If this representation of a cycle is a reasonable approximation of what lies in store for Canada over the next few years, the case for a front-loaded plan becomes even stronger (see Figure 8). Big debt paydowns made early on, when the economy is strong, narrow the differences among the three approaches considerably from about year 5 to year 9. From year 10 on, the power of compound interest keeps the front-loaded plan well ahead of the constant-surplus and back-loaded alternatives. It appears that, even if the circumstances are not quite as favorable as they were immediately after World War II, now would be a particularly apt time to embrace a front-loaded plan.

Buffering the Cycle

A further interesting fact about the cumulative payoffs in the simulations that include the effects of both changing interest rates and a business cycle is that, after the initial cycle, the front-loaded plan produces payoffs that are less affected by later downturns in the economy. Particularly in the case of the back-loaded plan, efforts to bring the budget back into line when times are harder cause previously won payoffs to be lost again. These simulations illustrate the analytical point, presented in Appendix A and discussed above, that there is not necessarily a trade-off between rigid short-run deficit targets and general macroeconomic performance.

But to relate to that analytical approach more directly, we extend the simulation model in two related directions. First, we allow changes in the budget balance to affect demand, as traditional Keynesian analysis predicts. Second, rather than requiring spending to adjust so as to hit the desired debt target in every period, we allow policymakers to vary spending in accordance with their view of the business cycle as well.

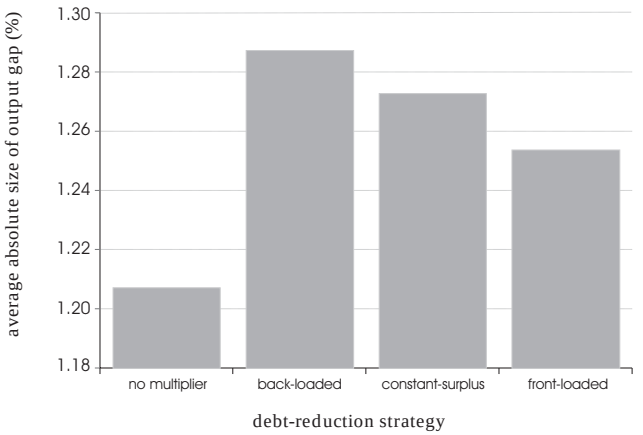
Choosing Multipliers

This extension requires attention to some difficult questions: How big is the impact on demand of changes in budget balances? How big do policymakers think it is?

Views on the first question have changed over the years. Multipliers — the ratio of changes in demand to the changes in taxes or spending that create them — used to be thought of as quite large (certainly more than one) and are now typically thought to be considerably smaller (less than one). There are several reasons for this change of views. Among them is the empirical fact that economies are more open than they once were, meaning that there is more potential for changes in fiscal policy to "leak" away in larger or smaller imports. Another is an increased appreciation of the possibility that forward-looking households and business may, as they anticipate the effects of today's fiscal policy on tomorrow's mix of taxes and spending, act so as to offset some of the impulse. In view of these uncertainties, we opt for a relatively small multiplier and, for convenience, do not distinguish between changes in taxes and spending.[20]

As to the second question, our perception is that belief in larger multipliers is still quite widespread in policy circles. Accordingly, we add a policy reaction function to the model that involves three assumptions: that policymakers know the size of the gap between actual demand and the economy's potential that existed in the previous

Figure 9: ***The Variability of the Output Gap under Alternative Debt-Reduction Strategies***



year, that policymakers assume that a certain amount of that gap will close in any event (one-third in the runs presented here), and that policymakers would like, in the absence of any other constraints, to adjust the budget balance to close the rest of the gap (in either a positive or a negative direction) on the assumption of a multiplier of 1.5.

Testing the Results

We implement these changes in two stages. First, we allow for feedback from the budget to the economy by allowing a 1 percent of GDP change in the primary budget balance to affect demand by 0.4 of a percentage point. Incorporating such an effect in the model adds some further volatility to the cycle (measured by the average absolute size of the output gap) as the effects of the fiscal program feed back through the economy (see Figure 9). Interestingly, however, the increase in volatility is greatest under the back-loaded program and least under the front-loaded program, which makes the biggest progress on the deficit during the first years, when the economy is relatively strong.

Second, we make the actual deficit target in each year the outcome of a 50-50 compromise between a Keynesian faction in the government and a debt-hawk faction (Appendix B provides more details). Given two presumptions in the model — that Keynesian multipliers, though small, behave as expected and that the strength of the economy's self-correcting mechanism is independent of the cabinet skirmish between Keynesian and debt-hawk factions — it is not surprising that this change somewhat reduces the economy's volatility during the adjustment period (see Figure 10). What is notable, however, is that, despite these presumptions, the improvement is not very great. Turning to the relative performance of the three approaches, the front-loaded plan is again the preferred alternative by a small margin, thanks to the progress in the early years, when the economy is strong.

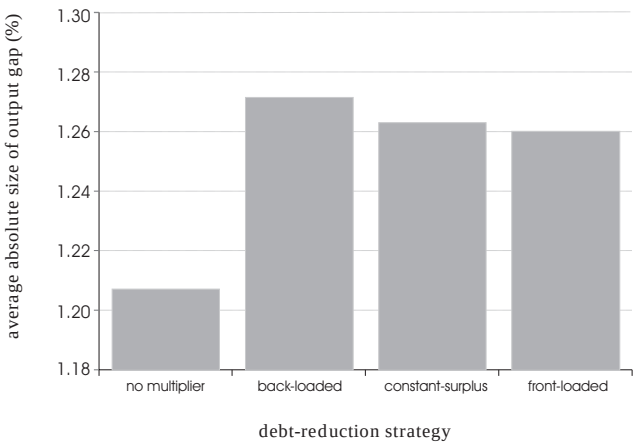
Selecting Instruments

The main message of this *Commentary* has already emerged: from a variety of points of view — intergenerational equity, long-term credibility, and macroeconomic stability — the front-loaded fiscal plan looks best. Accepting this view does not require agreement with all aspects of the specific model we have used to generate some sensitivity tests; after all, the model merely provides support for our message.

If the front-loaded debt-reduction approach is best, energetic debates over whether to devote the fiscal dividend over the next few years to lower taxes or higher spending are in one sense premature. There is a dividend in the form of interest savings in prospect right away. The need to get a good start on reducing debt, however, means that all of that dividend, and then some, should be reflected in a sizable budget surplus.

How, more specifically, might Ottawa implement such a program? One option would involve holding both the ratio of taxes to GDP and the real value of program spending per person roughly constant over the next several years. But, of course, other quite different implementation packages are possible — either higher program spending and correspondingly higher taxes, or lower spending and taxes — which, in many Canadians' eyes, might influence the payoffs from debt reduction. Our simulations suggest that the big-government versus small-government issue, while significant, is of second-order importance in its effect on the aggregate payoff from debt reduction.[21]

Figure 10: ***The Variability of the Output Gap under Alternative Debt-Reduction Strategies, with Keynesian Policymakers***



Modeling "Size of Government" Effects

At the core of many debates over programs and taxes are equity considerations: How much redistribution should there be? Are cash transfers or government-provided goods and services the best means of accomplishing redistribution? Who bears, or should bear, the burden of different taxes?

Many of these debates intersect with efficiency considerations: spending on public education, for example, may be both an efficient way to redistribute wealth and an effective way to encourage growth by overcoming the inability of the less well off to finance basic education;[22] a progressive expenditure tax may redistribute effectively without discouraging work and saving as an income tax does.[23]

Rounding out our investigation of fiscal plans with a quick look at the possible consequences of changes in one or another part of the federal budget necessarily involves some dramatic simplification. We therefore focus on the extent to which taxes — and transfers that look and feel much like taxes — distort the consumption and investment choices of households and firms, imposing deadweight costs that are over and above the revenue yield to the government.

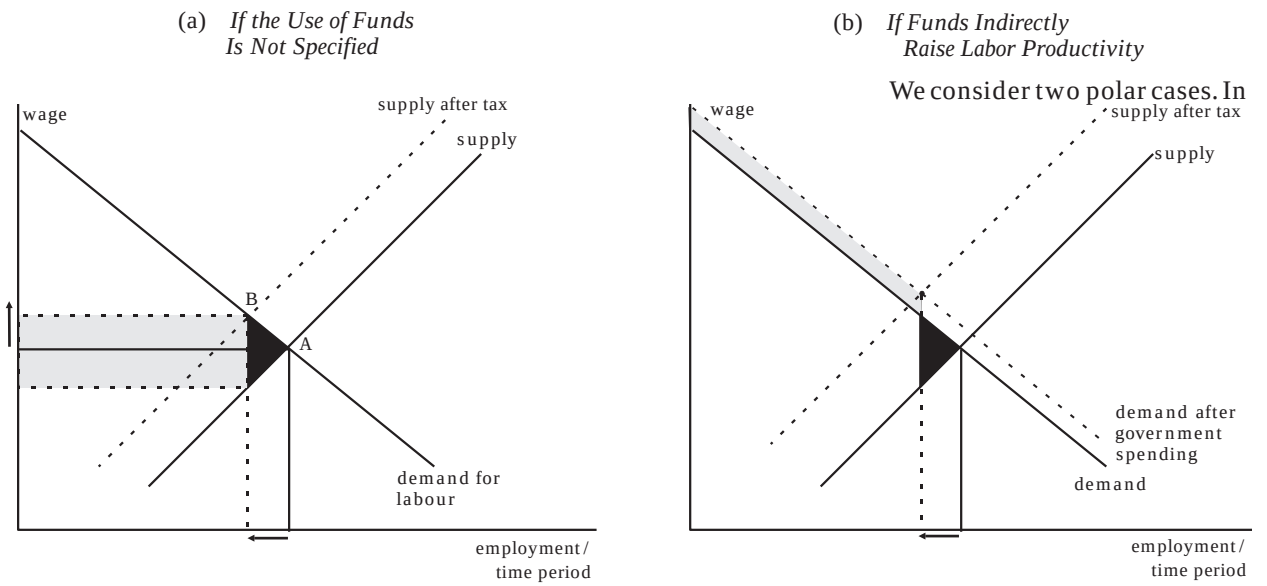
This principle is illustrated in Figure 11, which shows demand and supply curves for labor. Point A on panel (a) of the figure shows what wage and employment levels would be if no taxes affected them. Imposing a tax on labor income reduces labor supply, moving wage and employment levels to point B. Total taxes collected by the government are represented by the light-grey rectangle: the height of the rectangle is the tax per unit of labor, and the width of the rectangle is the amount of labor now employed, which is lower than it is without the tax.

Since the labor demand curve represents labor's marginal product, the value of the output lost because of the tax is represented by the area under the demand curve over the range of employment that is eliminated by the tax. The view that "work's a curse" sees some compensation for this loss since time not spent working can be turned to other uses. The value of this alternative use of time is the area under the labor supply curve over the range of employment eliminated by the tax. The net "excess burden" of the tax is the dark-grey triangle in panel (a). The marginal cost of public funds is the ratio of the two grey areas to the tax revenue collected.

It is clear from panel (a) that the marginal cost of public funds must rise as the level of the pre-existing tax rises. The fact that Canada's tax-to-GDP ratio has risen substantially in recent years means that actual estimates of this marginal cost of public funds have also risen. Some recent estimates of the size of these losses for the government's principal source of revenue, the personal income tax, put the ratio of this cost to the revenue raised as high as two.[24] If the taxes are financing transfers that are clawed back as income rises (thus acting much like income taxes) or if these transfers discourage work in other ways, (for example, by forbidding it as a condition of receipt), then the total cost involved in the entire fiscal operation would be even higher.

On the other side of the ledger, however, are some reasons for doubting that the overall cost of taxation is quite that high. Some important taxes, such as general consumption taxes, probably have marginal costs to the economy that are considerably smaller because they discourage work effort, training, saving, and investment less, or not at all. Moreover, some publicly provided goods and services may be complementary to items subject to tax — as productivity-enhancing infrastructure invest

Figure 11: ***The Costs of Taxation***



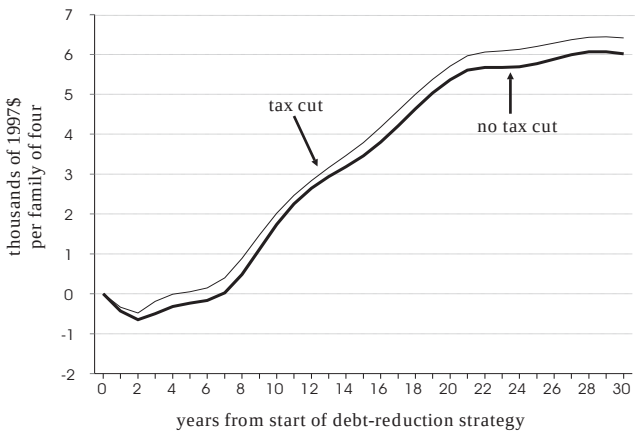
ment would be to the employment of labor — in which case, the marginal cost calculation may overstate the loss, or even invent one where none exists.[25] Referring back to Figure 11, this time to panel (b), using the revenue to finance programs that raise labor productivity would shift the demand curve to the right. In this case, net benefits can rise, not fall, since the additional output — the light-grey area in panel (b) — can be bigger than the traditional excess burden measure — the dark-grey triangle in panel (b).

The Simulation Results

In the simulation model, we introduce the effects of taxes as reductions in the effective size of the labor force, a proxy for either outright discouragement of working or discouragement of skills acquisition that makes workers more productive. As just noted, the nature and size of these effects is controversial, so we take a conservative approach. We assume that the impact of a change in tax rates is one-off — that is, that it affects the level of output, but not its growth rate.[26] And we use a fairly small number — 0.3 percent — as our estimate of the amount of work discouraged by a 1 percent increase in tax rates.[27]

the first, a front-loaded program similar to the last one that was reported above (that is, including interest rate effects and a business cycle, and incorporating both Keynesian impacts and a degree of Keynesian policymaking) is implemented by a government that aims to provide all of the fiscal dividend anticipated during the year up front as a tax cut at the beginning of the year. In the second case, none of it is allocated that way.[28] Comparing the payoffs of the two approaches yields a decision in favor of the tax cut option (see Figure 12). Although the gap between the two lines is significant, the contrast is less than overwhelming. Further, the additional gain from cutting taxes is small relative to the overall payoff from the debt-reduction program. From our perspective, the contrast between these two separate payoffs is a fair indication of the state of our knowledge about the advantages to be had from the two policies. The rewards from debt reduction are very large, and seem particularly certain if Ottawa pursues a strongly front-loaded approach. The rewards of cutting taxes are not negligible, but they are distinctly smaller. It would, therefore, be a great shame if a debate over the place of tax cuts or new programs in fiscal policy *in the coming years* were to pre-empt the more important initiative of getting a credible debt-reduction program in place *now*.

Figure 12: ***Payoffs from a Front-Loaded Debt-Reduction Strategy, with and without a Tax Cut***



Concluding Comment

The principal message of this *Commentary* is twofold.

First, the long-term payoff from a large debt-reduction program is massive. If, in pursuit of a policy of spreading the burden of the baby boomers' retirement more equitably among generations, Canada were to undertake a 20-year program to reduce the net federal debt from its current level of around 70 percent of GDP to 20 percent, the long-term payoff would be in the order of $6,000 annually per family of four in today's money.

Second, a front-loaded plan that achieved substantial budget surpluses in the next few years and made the greatest debt paydowns early in the program would be superior to other approaches for several reasons. It would reduce the temptation for governments to abandon the program before completion. It would reap early the benefits of any positive feedbacks of debt reduction through interest rates back to the economy and the budget. And it would make more rapid progress when the economy is strong, buying insurance against harder times further ahead.

As to whether the bulk of the long-run payoff should be reflected in tax cuts or spending increases, our aggregative investigation yields a definite, but less than overwhelming, result. It is likely that tax cuts would provide a bigger payoff by stimulating work. The differences even between strongly contrasting strategies in this regard would not be very large. They would certainly be small compared with the longer-term benefits of a rapid debt reduction.

The federal government could pursue a middle course between these two approaches as it implements a front-loaded debt-reduction plan. Our simulations suggest that the profile of federal finances over the next four years would, in some respects, be quite similar to what Canadians have experienced in the recent past. The ratio of taxes to GDP would decline slightly: tax rates would fall, reflecting the emergence of a small fiscal dividend; but this would be partially offset by the rise in the tax-to-GDP ratio that generally accompanies a strong economy. Federal spending per person, adjusted for inflation, would be about at its 1997 level. And the federal budget would continue to show strong improvements in its bottom line, with surpluses approaching $15 billion by the end of this government's mandate, and staying in the high teens in the early years of the next century.

C.D. Howe Institute Commentary© is a periodic analysis of, and commentary on, current public policy issues.

William B.P. Robson is a Senior Policy Analyst at the C.D. Howe Institute; William M. Scarth is Professor of Economics at McMaster University and an Adjunct Scholar of the C.D. Howe Institute. The text was copy edited by Barry A. Norris and prepared for publication by Wendy Longsworth.

As with all Institute publications, the views expressed here are those of the authors, and do not necessarily reflect the opinions of the Institute's members or Board of Directors.

To order this publication, please contact: Renouf Publishing Co. Ltd, 5369 Canotek Road, Unit 1, Ottawa, Ontario K1J 9J3 (tel.: 613--745--2665; fax: 613--745--7660), Renouf's stores at 71½ Sparks Street, Ottawa (tel.: 613--238--8985) and 12 Adelaide Street West, Toronto (tel.: 416--363--3171), or the C.D. Howe Institute, 125 Adelaide Street East, Toronto, Ontario M5C 1L7 (tel.: 416--865--1904; fax: 416–865–1866; e–mail: cdhowe@cdhowe.org).

We also invite you to visit the Institute's Internet web site at:

http://www.cdhowe.org

$6.00; ISBN 0-88806-422-5

In another key respect, however, this prospect differs markedly from what Canadians have become used to. Budget surpluses, plus a growing economy, would bring about a rapid decline in the burden of federal debt relative to the economy and, with it, a growing fiscal dividend as the burden of interest payments dropped. As this dividend was reinvested in further debt reduction, Canada would be on the road to a huge payoff.

Looking a long way ahead, it would lead to a 20 percent debt-to-GDP ratio in 20 years' time, a level that would promise a cushion against the fall in living standards below trend that might otherwise accompany the retirement of the baby boomers. And even over a shorter period, a front-loaded strategy promises growing rewards, as the fiscal dividend grows and the required budget surplus shrinks, creating room for thousands of dollars per family in tax cuts and new programs. The 1998 federal budget should take the first step along that road.

Appendix A:
An Analysis of Built-In Stability

Appendix A compares a program of rigid short-run deficit targets to one involving flexible short-run targets. It makes analysis of this long-standing question up to date by relying on an analytical framework that highlights recent developments in macroeconomics.

The following equations describe a variant of the standard perfect-foresight model of aggregate demand and supply:[29]

$$y = a(m - p) + c(Dp) + e(g + x) + fb,$$
$$D = k(y - n),$$
$$Dm = -h(Dp),$$
$$Db = r(g + (1 - t)b - ty),$$
$$g = j(ty - (1 - t)b) + (1 - j)(z - sb).$$

The notation is defined as follows: y, n, g, z, t, b, x, r, m, and p stand for real output, the natural rate of output, government program spending, an autonomous component of government spending, the tax rate, the quantity of government bonds (indexed consols each paying one unit of real purchasing power each period), autonomous private spending, the real interest rate, and the natural logarithms of the nominal money supply and the price level. D denotes a time derivative, and all other letters stand for positive slope parameters. j is an index; by taking on values between zero and one, the alternative financing regimes are considered. $j = 1$ implies that a rigid policy — a balanced budget at each point in time — is in place.

The first two equations define aggregate demand and inflation; the latter depends on the output gap and the equilibrium inflation rate (which is zero). The third equation defines monetary policy; the money growth rate is less than its long-run average value (zero) whenever the inflation rate exceeds its target value (zero). The final two equations define fiscal policy; the increase in debt equals the budget deficit, and government spending is adjusted to keep the budget balanced (when $j = 1$) or to keep the national debt from exploding (when $j = 0$).

We consider a once-for-all reduction in autonomous demand; we compare the size of the resulting recession (the impact effect on y, which is e/v, where $v = 1 - ck - ejt$), the speed with which that recession is eliminated, which is $u/2v$, where

$$u = ak(1 + h) - r(1 - j)(1 - t - s)v - ert(1 - j)[j(1 - t) + (1 - j)s]),$$

and the cumulative (undiscounted) output loss (which is $2e/u$), for the alternative values of j. The economy's self-correction mechanism works (that is, the system is stable) if v is positive when $j = 1$. In addition to this restriction, s $(1 - t)$ is required for convergence to full equilibrium when all other values of j are considered. We assume that these stability conditions are satisfied. The undesirable slower-speed effect dominates the desirable smaller-impact-multiplier effect (so that the cumulative output loss is made larger) when policy moves away from the rigid budgeting case if the derivative of u with respect to j is positive. There are at least two ways to justify the positive sign for this derivative. Both Ricardian equivalence ($f = 0$) or a rejection of that hypothesis with $f = e(1 - t)$ — as is arguably appropriate in that case[30] — are sufficient though not necessary to establish the superiority of the rigid budget policy.

Appendix B:
The Simulation Model

Appendix B describes the model used in the simulations (other than what follows from basic accounting identities that generated Figures 2–5) in this *Commentary*. The objective of modeling different types of fiscal behavior in an economy with a number of standard characteristics, including a steady-state solution, that could be calibrated to Canadian data and leave considerable latitude for varying key parameters suggested several discrete blocks: a supply side; a demand side; a set of equations and identities describing household and business spending (which includes provincial and municipal governments); a foreign sector; the federal government; and an interest rate determination block. The model is coded in discrete time.

The Supply Side

The effective labor force is an exogenously determined population of labor force age, which grows at a rate of 1.5 percent annually, modified by an index of tax distortions (set either to 0 or 0.3 of a percentage point for every percentage point change in the tax rate in the simulations reported here) and multiplied by an exogenously determined productivity index, which grows at a rate of 0.5 percent annually. The effective labor force combines with the capital stock in a standard Cobb-Douglas production function, with weights of 0.75 and 0.25, to give yield potential output in real terms. Multiplication by an exogenously determined price index, which grows at 2 percent annually, yields average annual nominal growth, in a steady state, of just under 4.05 percent annually.

The Demand Side

An output gap variable determines the fluctuations of total output around the level dictated by supply. The output gap is determined partly by an exogenously determined cycle (a sine-wave eight years from peak to peak and four percentage points of potential output from peak to trough in the simulations reported here) and a fiscal impulse variable that summarizes the effects of tax and spending changes on demand by multiplying changes in the primary budget balance by an exogenously determined "multiplier" (set either at 0 or 0.4 in the simulations reported here). Although the use of a single multiplier for both taxes and spending is a bit unconventional, we regard it as a reasonable simplification for two reasons. First, there is considerable uncertainty around the effects of changes in either side of the budget on demand, with considerable overlap in the ranges. Second, the distinction between taxes and spending, especially now that so many transfers are delivered through the tax system and are shown in the budget as reductions in revenue, is not as clear as is sometimes made out. We implicitly assume that, in targeting inflation, the Bank of Canada eliminates all but this first-period effect of fiscal policy on demand.

Household and Business Spending

The household consumption function — or, more properly, the consumption function of households and all nonfederal governments together — is a fixed proportion (0.83) of the sum of national income (output minus net factor payments to foreigners), interest on federal government debt, and transfer payments less taxes, minus the proportion (0.5 in the simulations reported here) of federal consumption spending assumed to substitute for private consumption. A standard partial-adjustment model determines firms' investment in new capital. Firms set their desired capital stock by comparing the marginal product of the previous year's capital stock (given the previous year's effective labor force) with the gross rental cost of new equipment (the interest rate plus depreciation of 4 percent annually); the gap between that desired stock and the existing capital stock closes at a rate of 35 percent annually.

The Foreign Sector

The difference between output and total absorption (spending by "households" and firms) determines the balance of trade in goods and services. The balance of factor payments — interest and dividend income to and from foreigners — is the level of net foreign assets outstanding during the year (the average of the previous year's year-end figure and the current year's figure) times the interest rate. The goods and services balance and this factor income balance determine changes in net foreign assets.

The Federal Government

The federal government levies taxes on a base made up of national income (output minus net factor payments abroad), interest on federal debt, and federal transfers, minus exemptions that we define in aggregate as equal to twenty-five percentage points of potential output. This last feature produces federal revenues that are pro-cyclical, rising as a proportion of output when output is above potential and falling when it is below potential. The government sets the tax rate at the beginning of each year according to a formula that allocates an exogenously determined proportion (0, 0.5, or 1.0 in the simulations reported here) of the change in interest costs anticipated during the year (on the basis of the target debt ratio and last year's interest rate) to changes in taxes.

The government determines a desired budget balance so as to close any gap that exists between the previous year's realized debt-to-GDP ratio and the exogenously determined target debt-to-GDP ratio for the end of the year, after allowing for the amount by which expected growth — which is potential growth in the previous year minus a specified (one-third here) proportion of the previous year's output gap[31] — would reduce the ratio in any event, and also allowing an adjustment (either none or 50 percent of the otherwise desired balance) for cycle-smoothing Keynesian policies (calibrated on the policymakers' assumption that the average "multiplier" relating changes in the primary balance to changes in output is 1.5).

Program spending is determined residually, to achieve the desired budget balance once expected taxes (the tax rate times the previous year's tax base) and expected net interest costs are allowed for. Thirty percent of federal program spending is assumed to be on goods and services; the remainder is transfers.

Interest Rates

Interest rates are determined by adjusting an exogenously specified base level by exogenously determined premiums related to the government and foreign debt-to-GDP ratios (either 0 or 0.02 for every percentage point in the simulations reported here) at the end of the previous year. To make the model's starting point conform to 1997's reality — we estimate the average federal net interest rate at 6.8 percent in fiscal year 1997/98 — we need to choose a base level, after allowing for the specified premiums and the starting period's actual debt levels, that yields the right 1997 figure. Thus, for example, with the 0.02 percent premium, the implied base level for interest rates is 4.6 percent (6.8 minus the sum of the foreign and government debt-to-GDP ratios — 110 percent — times 0.02). Firms borrow at the same interest rate as the government.

Notes

We are grateful to Ken Boessenkool, Paul Boothe, Angela Ferrante, Tom Kierans, David Laidler, Daniel Schwanen, and several anonymous reviewers for a number of comments and suggestions that improved this paper; we alone are responsible for its conclusions, as well as any defects that remain.

1 Here and throughout this *Commentary*, we measure federal interest payments on a net basis — that is, after deducting the investment income Ottawa earns on its financial assets. This treatment makes federal interest payments directly comparable to the familiar net debt figures (federal gross liabilities minus financial assets) and avoids the distortions that matching increases and decreases in both sides of the federal balance sheet and income statement can produce when only gross figures are examined. For similar reasons, we define federal tax revenue as total revenue minus investment income.

2 See William B.P. Robson, "The Paradox of the Fiscal Dividend: The Bigger It Looks, the Smaller It Gets," Backgrounder (C.D. Howe Institute), October 7, 1997.

3 We follow the usual practice of comparing net debt outstanding at the end of the fiscal year (March 31, 1997, in the case of 1996/97) with GDP during the calendar year that overlaps with it most completely (1996 in this example).

4 This 4 percent could result from 1.5 percent annual growth in the labor force, 0.5 percent annual productivity growth, and 2 percent inflation.

5 It may be worth emphasizing that the amount that a higher debt target would add to the payoff by boosting the steady-state deficit ratio would be more than outweighed by the amount that it would subtract by eroding the fiscal dividend. Staying at 70 percent, for example, would allow an immediate move from a balanced budget to a deficit of 2.8 percent of GDP, but would yield no fiscal dividend at all.

6 Even more off the mark are those who apply this breakdown to the annual budget surplus. It makes no sense at all to talk about applying, for example, one-half of a "dividend" so defined to new spending, one-quarter to tax cuts, and one-quarter to debt reduction. What if Ottawa simply balanced the budget every year from now on? Any proportion of zero is nothing, and the guidelines are meaningless.

7 J.-F. Fillion, "L'endettement du Canada et ses effets sur les taux d'intérêt réels de long terme," Bank of Canada Working Paper 96-14 (Ottawa, 1996).

8 See William Scarth, *Deficit Reduction: Costs and Benefits*, C.D. Howe Institute Commentary 61 (Toronto: C.D. Howe Institute, May 1994).

9 The National Balance Sheet Accounts valued federal tangible assets (not including land but including inventories) at somewhat less than $28 billion at the end of 1996, 3.5 percent of that year's GDP.

10 14½ percent of GDP divided by 0.068 is about 213 percent of GDP.

11 See, for example, S.R. Aiyagari and E.R. McGrattan, "The Optimum Quantity of Debt," Federal Reserve Bank of Minneapolis Research Department Staff Report 203 (Minneapolis, 1995).

12 We assume here that pure Ricardian equivalence is an inappropriate basis for analyzing national savings initiatives. A defense of this view is offered in William B.P. Robson and William M. Scarth, "Debating Deficit Reduction: Economic Perspectives and Policy Choices," in William B.P. Robson and William M. Scarth, eds., *Deficit Reduction: What Pain, What Gain?* Policy Study 23 (Toronto: C.D. Howe Institute, 1994), p. 34.

13 William Scarth and Harriet Jackson, "The Target Debt-to-GDP Ratio: How Big Should It Be? And How Quickly Should We Approach It?" in a forthcoming volume based on a conference organized by the John Deutsch Institute for the Study of Economic Policy (Queen's University) and the Institute for Policy Analysis (University of Toronto).

14 See David Smyth, "Built-In Flexibility of Taxation and Stability in a Simple IS-LM Model," *Public Finance* 29 (1974): 111–113; and Fred Gorbet and John Helliwell, "Assessing the Dynamic Efficiency of Automatic Stabilizers," *Journal of Political Economy* 79 (4, 1971): 826–845.

15 Hence the finding, contrary to traditional analysis, that US states with stringent budget-balancing roles do not have higher variability in output than those without them. See Jonathan Millar, "The Effects of Budget Rules on Fiscal Performance and Macroeconomic Stabilization," Bank of Canada Working Paper 97-15 (Ottawa, 1997).

16 The assumption that the government adjusts program spending fully to hit the debt target is convenient for a starting illustration, but is relaxed later.

17 To make this idea concrete, suppose a family opts to spend a vacation in a federally financed national park rather than at a private resort; it will, however, need to buy transportation to get to either place.

18 In later simulations, we allow for the possibility that tax rates affect work effort.

19 We assume no appreciable nonlinearity in the short-run Phillips curve, so that this variation in output has no effect on the average inflation rate.

20 See John Helliwell, "What's Left for Macroeconomic and Growth Policies?" *Bell Canada Papers on Economic and Public Policy* 2 (1993): 5–48. Helliwell's estimates of the multiplier are in the 0.50 to 0.67 range. These estimates are derived from simulations that involve a fixed money supply. With the Bank of Canada now targeting inflation, a significant downward revision in the aggregate demand multipliers is appropriate.

The reader may wonder why these estimates exceed zero — after all, the standard result for a small, open economy with a flexible exchange rate is that fiscal multipliers are zero. But extensions to this basic model (which allow for short-run exchange rate overshooting, supply-side effects of the exchange rate, and a central bank that targets a monetary

conditions index) cause the basic result to be replaced by a small positive value. Concerns about the assumption that the tax and spending multipliers are equal should be mitigated by the fact that most of federal spending is transfers.

21 If intergenerational equity is motivating debt reduction, tax and spending changes that increase the relative burden on today's younger Canadians should be avoided since they would work against this objective.

22 See David Love and Huw Lloyd-Ellis, "Inequality, Growth, and the Role of Government," in William B.P. Robson and William Scarth, eds., *Equality and Prosperity: Finding Common Ground*, Policy Study 30 (Toronto: C.D. Howe Institute, 1997).

23 See William B.P. Robson and William Scarth, "Equality and Prosperity: Some Facts and Alternative Interpretations," in Robson and Scarth, eds., *Equality and Prosperity*.

24 See Bev Dahlby, "The Distortionary Effect of Rising Taxes," in Robson and Scarth, eds., *Deficit Reduction*.

25 Robin Boadway and Michael Keen ("Public Goods, Self- Selection and Optimal Income Taxation," *International Economic Review* 34 [3, 1993]: 463–478) argue that the issue hinges on whether the publicly provided item is complementary with, or substitutable for, leisure. The relevance of this rather abstract literature for actual policy decisions needs to be assessed more carefully.

26 An impact on growth rates is implied by endogenous growth theory, which predicts that taxes that discourage the acquisition of knowledge may lower the economy's growth *rate* over the long term.

27 This number is reasonably close to that calculated by Dahlby ("The Distortionary Effect of Rising Taxes") for federal income tax levied at the bottom rate. It is also in the range that Scarth and Jackson ("The Target Debt-to-GDP Ratio") argue is appropriate when other ways of modeling the labor market (for example, ones involving involuntary unemployment) are considered.

28 In the simulations shown to this point, the breakdown between spending increases and tax cuts did not matter since the link by which tax rates affect labor supply in the model was "switched off."

29 This class of models is described in William Scarth, *Macroeconomics: An Introduction to Advanced Methods*, 2nd ed. (Toronto: Dryden Press, 1996), chap. 4.

30 Alan Blinder and Robert Solow, "Does Fiscal Policy Matter?" *Journal of Public Economics* 2 (1973): 319–337.

31 In other words, the government expects one-third of any gap that existed in the previous year to disappear during the year.