Department of Finance Canada
Ministère des Finances Canada

Tax Expenditures and Evaluations 2010

Canada

Cette publication est aussi disponible en français.

Cat. No.: F1-27/2010E-PDF
ISBN 978-1-100-16997-2

Table Contents

Preface

The Department of Finance has published tax expenditures for personal and corporate income taxes as well as for the Goods and Services Tax since 1994. Beginning in 2000, the tax expenditure report has been separated into two documents. This document, *Tax Expenditures and Evaluations*, is published annually. It provides estimates and projections for broadly defined tax expenditures as well as evaluations and analytical papers addressing specific tax measures. This year's edition includes two analytical papers entitled "Taxes and the Preferred Source of Corporate Finance" and "The Response of Individuals to Changes in Marginal Income Tax Rates".

The second document, *Tax Expenditures: Notes to the Estimates/Projections*, is a reference document for readers who want descriptions of, or information on the objectives of, particular tax expenditures or who wish to know more about how the estimates and projections are calculated. This document is published periodically and a new 2010 edition is available on the Department of Finance website.

Part 1
Tax Expenditures: Estimates and Projections

Introduction

The principal function of the tax system is to raise the revenues necessary to fund government expenditures. The tax system can also be used directly to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. These measures are often described as "tax expenditures" because they achieve policy objectives at the cost of lower tax revenue.

To identify and estimate tax expenditures, it is necessary to establish a "benchmark" tax structure that applies the relevant tax rates to a broadly defined tax base—e.g. personal income, business income or consumption. Tax expenditures are then defined as deviations from this benchmark. Reasonable differences of opinion exist about what should be considered a normal part of the tax system and hence about what should be considered a tax expenditure. A more detailed discussion on the calculation of the tax expenditures presented in this document is available in the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections.*

This report takes a broad approach and includes estimates and projections of the revenue loss associated with all but the most fundamental structural elements of the tax system, such as the progressive personal income tax rate structure. This includes not only measures that may reasonably be regarded as tax expenditures but also other measures that may be considered part of the benchmark tax system. The latter are listed separately under "Memorandum Items." For instance, the Dividend Tax Credit is listed under this heading because its purpose is to reduce or eliminate the double taxation of income earned by corporations and distributed to individuals through dividends. Also included under this heading are measures where data limitations do not permit a separation of the tax expenditure and benchmark components of the measure. This approach provides information on a full range of measures.

Caveats

Care must be taken in interpreting the estimates and projections of tax expenditures in the tables for the following reasons.

- The estimates and projections are intended to indicate the potential revenue gain that would be realized by removing individual tax measures. They are developed assuming that the underlying tax base would not be affected by removal of the measure. However, this is an assumption that is unlikely to be true in practice in some cases, as the behaviour of beneficiaries of tax expenditures, overall economic activity and other government policies could change along with the specific tax provision.
- The cost of each tax measure is determined separately, assuming that all other tax provisions remain unchanged. Many of the tax expenditures do, however, interact with each other such that the impact of several tax provisions at once cannot generally be calculated by adding up the estimates and projections for each provision.
- The federal and provincial income tax systems interact with each other to varying degrees. As a result, changes to tax expenditures in the federal system may have consequences for provincial tax revenues. In this publication, however, any such provincial effects are not taken into account—that is, the tax expenditure estimates and projections address strictly the federal tax system and federal tax revenue.

- The tax expenditure estimates and projections presented in this document are developed using the latest available taxation data. Revisions to the underlying data as well as improvements to the methodology can result in substantial changes to the value of a given tax expenditure in successive publications. In addition, estimates and projections for some tax measures, such as the partial inclusion rate on capital gains, are particularly sensitive to economic parameters and hence may also differ significantly from one publication to the next.

What's New in the 2010 Report

New tax measures were introduced and others modified in Budget 2010. Changes affecting tax expenditures are described below. They all relate to personal income tax.

Inclusion of the Universal Child Care Benefit in the Income of an Eligible Dependant

Budget 2010 announced that a single parent has the option of including the aggregate Universal Child Care Benefit amount received, in respect of all of his or her children, in the parent's income or in the income of the dependant for whom an Eligible Dependant Credit is claimed. If a single parent is unable to claim an Eligible Dependant Credit, he or she has the option of including the aggregate Universal Child Care Benefit amount in the income of one of the children for whom the Universal Child Care Benefit is paid. This measure applies to the 2010 and subsequent taxation years.

Medical Expense Tax Credit

The Medical Expense Tax Credit provides tax recognition for above-average medical and disability-related expenses incurred by individuals. For 2010, the Medical Expense Tax Credit reduces the federal tax of a claimant by 15% of eligible unreimbursed medical expenses in excess of the lesser of $2,024 and 3% of net income. An expense is generally eligible to be claimed if it is directly related to a disability or a medical condition. An expense is not generally intended to be eligible if it is ordinarily incurred by persons without a disability or a medical condition or has a substantial element of personal consumption and choice. To ensure consistency with the intent of the credit, Budget 2010 announced that expenses incurred for purely cosmetic procedures (including services and related expenses) would be ineligible to be claimed under the Medical Expense Tax Credit. Cosmetic procedures will continue to qualify for the credit if they are required for medical or reconstructive purposes. This measure applies to expenses incurred after March 4, 2010.

Employee Stock Option Deduction

If an employee acquires a security of his or her employer under a stock option agreement in the course of his or her employment, the difference between the fair market value of the security at the time the option is exercised and the amount paid by the employee to acquire the security is treated as a taxable employment benefit. If certain conditions are met, the employee is entitled to a deduction equal to one-half of the employment benefit (the stock option deduction).

Prior to Budget 2010, it was possible to structure employee stock option agreements so that if employees disposed of ("cashed out") their stock option rights for a cash payment from the employer (or other in-kind benefit), the employment benefit was eligible for the stock option deduction while the cash payment was fully deductible by the employer.

Budget 2010 announced that both the stock option deduction and a deduction by the employer cannot be claimed for the same employment benefit. To this effect, the stock option deduction will generally be available to employees only in situations where they exercise their options by acquiring securities of their employer. An employer may continue to allow employees to cash out their stock option rights to the corporation without affecting their eligibility for the stock option deduction provided the employer makes an election to forgo the deduction for the cash payment. This measure applies to dispositions of employee stock options that occur after 4:00 p.m. Eastern Standard Time on March 4, 2010.

U.S. Social Security Benefits

Prior to 1996, pursuant to the Canada-United States Tax Convention (1980), Canadian residents receiving benefits under the social security legislation in the United States, including tier 1 railroad retirement benefits but not including unemployment benefits ("U.S. Social Security benefits"), were required to include only 50% of those benefits in computing income. Changes made to the Canada-U.S. Tax Convention effective beginning in 1996 increased the inclusion rate for U.S. Social Security benefits to 85% from 50%. Budget 2010 reinstated the 50% inclusion rate for Canadian residents who have been in receipt of U.S. Social Security benefits since before January 1, 1996 and for their spouses and common-law partners who are eligible to receive survivor benefits. This measure applies to U.S. Social Security benefits received on or after January 1, 2010.

Mineral Exploration Tax Credit for Flow-Through Share Investors

The Mineral Exploration Tax Credit is a reduction in tax, available to individuals who invest in flow-through shares, equal to 15% of specified mineral exploration expenses incurred in Canada and transferred to flow-through share investors. The credit was introduced on a temporary basis in 2000 and has been extended since then. Budget 2010 extended eligibility for the credit, for an additional year, to flow-through share agreements entered into on or before March 31, 2011. Under the one-year "look-back" rule, funds raised with the benefit of the credit in 2011, for example, can be spent on eligible exploration up to the end of 2012.

The Tax Expenditures

Tables 1 to 3 provide tax expenditure values for personal income tax, corporate income tax and the Goods and Services Tax (GST) for the years 2005 to 2010. Values for the years 2005 to 2008 are generally based on tax data supplied by the Canada Revenue Agency, or are calculated from data supplied by Statistics Canada and other government departments and agencies. Values for the 2009 and 2010 projections are usually determined from the historical relationship between a tax expenditure and relevant economic variables. These economic variables are generally based on the forecast presented in the October 2010 Update of Economic and Fiscal Projections. See Chapter 1 of *Tax Expenditures: Notes to the Estimates/Projections*[1] for additional details on the methodology.

The tax expenditures are grouped according to functional categories. This grouping is provided solely for presentational purposes and is not intended to reflect underlying policy considerations.

[1] Available on the Department of Finance website.

All estimates and projections are reported in millions of dollars. The letter "S" ("small") indicates that the absolute value of the tax expenditure is less than $2.5 million, "n.a." signifies that data are not available to support a meaningful estimate/projection, and a dash means that the tax expenditure is not in effect. The inclusion in the report of items for which estimates and projections are not available reflects the intention to provide information on measures included in the tax system even if it is not always possible to provide their revenue impacts. Work is continuing to obtain quantitative estimates and projections where possible.

Table 1

Personal Income Tax Expenditures*

	Estimates[1]			Projections[1]		
	2005	2006	2007	2008	2009	2010
	($ millions)					
Charitable Donations and Political Contributions						
Charitable Donations Tax Credit (excluding donations of assets subject to a reduced inclusion rate for capital gains)[2]	2,165	2,325	2,345	2,270	2,105	2,150
Donations of publicly listed securities[3]						
Charitable Donations Tax Credit	68	125	165	90	100	105
Reduced inclusion rate for capital gains	10	37	50	27	30	30
Total tax expenditure	78	160	215	115	130	135
Donations of ecologically sensitive land[3]						
Charitable Donations Tax Credit	3	4	6	9	8	6
Reduced inclusion rate for capital gains	S	S	S	3	3	S
Total tax expenditure	4	5	8	11	11	7
Donations of cultural property[3]						
Charitable Donations Tax Credit	22	28	22	21	19	19
Non-taxation of capital gains	7	9	7	7	6	6
Total tax expenditure	29	37	30	27	25	25
Political Contribution Tax Credit[4]	26	24	20	32	20	21
Culture						
Assistance for artists	S	S	S	S	S	S
Deduction for artists and musicians	S	S	S	S	S	S
Education						
Adult basic education—tax deduction for tuition assistance	5	5	5	5	5	5
Apprentice vehicle mechanics' tools deduction	3	4	3	3	3	3
Education Tax Credit[5]	220	240	210	220	200	210
Textbook Tax Credit[5, 6]	–	46	41	42	38	39
Tuition Tax Credit[5]	265	265	250	270	250	260
Transfer of Education, Textbook and Tuition Tax Credits	445	470	480	485	490	495
Carry-forward of Education, Textbook and Tuition Tax Credits[7]	365	420	425	430	405	415
Exemption of scholarship, fellowship and bursary income[8]	11	37	37	38	39	39
Registered Education Savings Plans	145	170	185	165	180	180
Student Loan Interest Credit	55	66	71	74	72	74

* The elimination of a tax expenditure would not necessarily yield the full tax revenues shown in the table. See the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections* (available on the Department of Finance website) for a discussion of the reasons for this.

Table 1 *(cont'd)*

Personal Income Tax Expenditures*

	Estimates[1]			Projections[1]		
	2005	2006	2007	2008	2009	2010
	($ millions)					
Employment						
Canada Employment Credit[9]	–	470	1,835	1,900	1,905	1,945
Child care expense deduction[10]	570	740	750	770	755	770
Deduction for income earned by military and police deployed to high-risk international missions	18	25	35	36	36	37
Deduction of home relocation loans	S	S	S	S	S	S
Deduction of other employment expenses	890	915	970	1,005	1,005	1,035
Deduction for tradespeople's tool expenses[11]	–	4	4	4	4	4
Deduction of union and professional dues	630	660	705	730	720	745
Deferral of salary through leave of absence/sabbatical plans	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Disability supports deduction	S	S	S	S	S	S
Employee benefit plans	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Employee stock option deduction[12]	945	1,085	1,155	755	415	590
Moving expense deduction	100	115	125	130	130	135
Non-taxation of certain non-monetary employment benefits	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of strike pay	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Northern residents deductions[13]	135	140	150	165	160	160
Overseas Employment Credit[14]	54	56	64	78	78	80
Tax-free amount for emergency service volunteers	14	14	14	14	14	14
Working Income Tax Benefit[15]	–	–	455	480	1,075	1,125
Family						
Adoption Expense Tax Credit[16]	3	S	3	3	S	S
Caregiver Credit	79	85	84	86	85	87
Child Tax Credit[17]	–	–	1,445	1,475	1,465	1,485
Deferral of capital gains through transfers to a spouse, spousal trust or family trust	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Infirm Dependant Credit	5	5	5	5	5	5
Spouse or Common-Law Partner Credit[18]	1,200	1,205	1,240	1,260	1,365	1,395
Eligible Dependant Credit[19]	665	675	755	765	785	795
Inclusion of the Universal Child Care Benefit in the income of an eligible dependant[20]	–	–	–	–	–	5
Farming and Fishing						
Lifetime capital gains exemption for farm and fishing property[21]	255	280	385	380	315	325
Cash basis accounting	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deferral of capital gains through intergenerational rollovers of family farms, family fishing businesses and commercial woodlots	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deferral of income from destruction of livestock[22]	-10	S	S	S	S	S
Deferral of income from sale of livestock during drought, flood or excessive moisture years[23]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deferral of income from grain sold through cash purchase tickets	-20	10	35	45	-10	-5

Table 1 *(cont'd)*

Personal Income Tax Expenditures*

	Estimates[1]			Projections[1]		
	2005	2006	2007	2008	2009	2010
	($ millions)					
Farming and Fishing *(cont'd)*						
Deferral through 10-year capital gain reserve	S	S	S	S	S	S
Exemption from making quarterly tax instalments	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AgriInvest (farm savings account)[24]	–	–	–	20	35	25
Flexibility in inventory accounting	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tax treatment of the Net Income Stabilization Account[25]						
Deferral of tax on government contributions	S	S	S	S	S	–
Deferral of tax on bonus and interest income	7	S	S	S	S	–
Taxable withdrawals	-155	-8	S	S	S	–
Federal-Provincial Financing Arrangements						
Logging Tax Credit	S	S	S	S	S	S
Quebec Abatement	3,405	3,495	3,520	3,605	3,360	3,570
Transfer of income tax points to provinces	15,935	16,995	17,450	17,585	16,420	17,460
General Business and Investment						
$200 capital gains exemption on foreign exchange transactions	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
$1,000 capital gains exemption on personal-use property	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Accelerated deduction of capital costs	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deduction of carrying charges incurred to earn income	895	1,105	1,270	1,200	890	935
Deferral through use of billed-basis accounting by professionals	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deferral through five-year capital gain reserve	21	25	15	10	10	10
Investment tax credits	15	20	20	20	15	20
Flow-through share deductions[26]	280	420	420	205	155	215
Mineral Exploration Tax Credit for flow-through share investors[27]	46	92	150	46	66	120
Reclassification of expenses under flow-through shares[28]	10	13	-4	-10	-12	-8
Partial inclusion of capital gains[29]	4,015	5,100	5,740	2,985	2,520	2,795
Taxation of capital gains upon realization	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tax-Free Savings Account[30]	–	–	–	–	45	155
Small Business						
Lifetime capital gains exemption for small business shares[31]	430	440	585	610	470	475
Deduction of allowable business investment losses	24	25	20	20	25	25
Deferral through 10-year capital gain reserve	S	S	S	S	S	S
Labour-Sponsored Venture Capital Corporations Credit	125	125	120	120	125	125
Non-taxation of provincial assistance for venture investments in small businesses	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rollovers of investments in small businesses	6	5	10	10	5	5

Table 1 *(cont'd)*

Personal Income Tax Expenditures*

	Estimates[1]			Projections[1]		
	2005	2006	2007	2008	2009	2010
	($ millions)					
Health						
Children's Fitness Tax Credit[32]	–	–	90	105	110	115
Disability Tax Credit	395	430	465	485	465	505
Medical Expense Tax Credit[33]	805	875	915	1,005	1,010	1,010
Non-taxation of business-paid health and dental benefits	2,170	2,310	2,535	2,705	2,795	2,970
Refundable Medical Expense Supplement[34]	92	115	110	120	130	135
Income Maintenance and Retirement						
Age Credit[35]	1,395	1,810	1,810	1,910	2,225	2,310
Deferred Profit-Sharing Plans	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of certain amounts received as damages in respect of personal injury or death	14	15	18	19	18	19
Non-taxation of Guaranteed Income Supplement and Allowance benefits[36]	245	180	170	185	89	100
Non-taxation of investment income from life insurance policies[37]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of RCMP pensions/compensation in respect of injury, disability or death	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of social assistance benefits[38]	180	185	145	165	125	135
Non-taxation of up to $10,000 of death benefits	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of veterans' allowances, income support benefits, civilian war pensions and allowances, and other service pensions (including those from Allied countries)	3	S	S	S	S	S
Non-taxation of veterans' disability pensions and support for dependants	145	150	150	150	135	140
Non-taxation of veterans' Disability Awards	–	3	11	19	22	22
Non-taxation of workers' compensation benefits	620	630	655	690	645	670
Registered Disability Savings Plans[39]	–	–	–	S	S	S
Pension Income Credit[40]	420	840	975	995	950	985
Pension income splitting[41]	–	–	840	865	875	920
Registered Pension Plans[42]						
Deduction for contributions	8,355	9,830	9,430	9,865	10,385	10,740
Non-taxation of investment income	11,580	13,080	14,825	6,730	7,640	8,055
Taxation of withdrawals	-7,280	-7,295	-6,790	-7,080	-6,900	-7,175
Net tax expenditure	12,655	15,615	17,465	9,515	11,125	11,620
Registered Retirement Savings Plans[42]						
Deduction for contributions	6,820	7,325	7,405	7,235	7,030	7,280
Non-taxation of investment income	6,920	7,990	9,110	3,705	4,465	5,020
Taxation of withdrawals	-4,280	-4,620	-5,030	-4,795	-4,810	-4,985
Net tax expenditure	9,460	10,695	11,485	6,145	6,685	7,315
Supplementary information: present-value of tax-assisted retirement savings plans[43]	8,120	8,850	9,080	9,230	9,430	10,190

Table 1 *(cont'd)*

Personal Income Tax Expenditures*

	Estimates[1]			Projections[1]		
	2005	2006	2007	2008	2009	2010
	($ millions)					
Income Maintenance and Retirement *(cont'd)*						
Saskatchewan Pension Plan	S	S	S	S	S	S
Treatment of alimony and maintenance payments	97	86	87	92	94	99
U.S. Social Security benefits[44]	S	S	S	S	S	5
Other Items						
Deduction for certain contributions by individuals who have taken vows of perpetual poverty	S	S	S	S	S	S
Deduction for clergy residence	70	75	82	85	84	86
First-Time Home Buyers' Tax Credit[45]	–	–	–	–	135	145
Home Renovation Tax Credit[46]	–	–	–	–	2,265	–
Non-taxation of capital gains on principal residences[47]	3,465	4,325	5,285	3,015	3,735	3,930
Non-taxation of income from the Office of the Governor General	S	S	S	S	S	S
Non-taxation of income of status Indians and Indian bands on reserve	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Special tax computation for certain retroactive lump-sum payments	S	S	S	S	S	S
Public Transit Tax Credit[48]	–	45	110	135	140	145
Memorandum Items						
Avoidance of Double Taxation						
Dividend gross-up and credit[49]	1,730	2,330	3,015	3,505	3,885	3,810
Foreign Tax Credit	655	705	780	780	780	800
Non-taxation of capital dividends	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Loss Offset Provisions						
Capital loss carry-overs[50]	305	340	330	125	225	225
Farm and fishing loss carry-overs	15	15	15	15	10	15
Non-capital loss carry-overs	50	50	70	50	50	50
Social and Employment Insurance Programs						
Canada Pension Plan and Quebec Pension Plan						
Employee-Paid Contribution Credit	2,510	2,665	2,750	2,860	2,880	2,970
Non-taxation of employer-paid premiums	3,960	4,145	4,445	4,620	4,600	4,760
Employment Insurance and Quebec Parental Insurance Plan						
Employee-Paid Contribution Credit[51]	970	965	945	950	950	995
Non-taxation of employer-paid premiums	1,995	1,835	1,865	1,870	1,860	1,920

Table 1 *(cont'd)*

Personal Income Tax Expenditures*

	Estimates[1]			Projections[1]		
	2005	2006	2007	2008	2009	2010
	($ millions)					
Memorandum Items *(cont'd)*						
Other						
Basic Personal Amount[52]	23,410	24,350	26,015	26,370	27,920	28,535
Deferral through capital gains rollovers	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of lottery and gambling winnings	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of allowances for diplomats and other government employees posted abroad	26	27	29	31	33	35
Partial deduction of meals and entertainment expenses	125	125	150	160	170	180

Notes:

1 Unless otherwise indicated in the footnotes, changes in the estimates and projections from those in last year's report, as well as variations from year to year, result from new data and changes in the economic variables affecting the tax expenditures. Changes from last year's report may also reflect the availability of new data sources as well as methodological improvements, in which case the estimates and projections presented in this year's publication may not be comparable to those published in previous reports. In addition, the tax expenditure estimate or projection for a given measure is often affected by changes to other measures. In particular, the introduction or enhancement of broad-based non-refundable tax credits (e.g. the Basic Personal Amount, Age Credit, Pension Income Credit and Child Tax Credit) along with reductions in the lowest personal income tax rate tend to reduce tax expenditure estimates and projections. Further details on the tax expenditures presented in this table are available in the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections.*

2 The presentation of this tax expenditure has changed from last year's report. Starting this year, the components of the Charitable Donations Tax Credit associated with donations of publicly listed securities, ecologically sensitive land and cultural property are presented separately (see note 3). The estimates and projections presented on this line reflect the Charitable Donations Tax Credit associated with all other donations. The total tax expenditure for the Charitable Donations Tax Credit would take into account all relevant components.

3 The total tax expenditure cost of donations of these types of assets has two components: the cost of the Charitable Donations Tax Credit and the revenue forgone from the reduced inclusion rate for capital gains (or the non-taxation of capital gains in the case of gifts of cultural property). Budget 2006 reduced the inclusion rate for capital gains on donations of publicly listed securities and ecologically sensitive land from 25% to zero, effective May 2, 2006. Budget 2007 extended this provision to include donations of eligible securities to private foundations, effective March 19, 2007. The components may not add up to the totals due to rounding.

4 The higher levels for this tax expenditure in 2005 and 2006 reflect the fact that contributions in respect of the 39th general election were spread over two calendar years. The tax expenditure is projected to be higher in 2008 as a result of contributions in respect of the 40th general election.

5 These tax expenditures relate to amounts earned and claimed in the year by students (i.e. neither transferred nor carried forward).

6 This measure was introduced in Budget 2006, effective January 1, 2006.

7 For a given year, this tax expenditure represents the value of Education, Textbook and Tuition Tax Credits earned in past years and used in that year. The tax expenditure does not include the pool of unused Education, Textbook and Tuition Tax Credits that have been accumulated but will be deferred for use in future years.

8 Budget 2006 exempted all amounts received for post-secondary scholarships, fellowships and bursaries from tax, effective 2006, where these amounts are received in connection with enrolment in a program for which the student can claim the Education Tax Credit. The maximum exemption for tax years prior to 2006 was $3,000 for these students. Budget 2007 extended this treatment to elementary and secondary school students, effective 2007.

9 This measure was introduced in Budget 2006. Because it was effective in July 2006, the maximum amount on which the credit is calculated for the 2006 taxation year is $250. For 2007, the maximum amount on which the credit is calculated was increased to $1,000. This maximum amount has been indexed for years after 2007.

10 The increase in the tax expenditure in 2006 reflects the phase-out of the Canada Child Tax Benefit under-7 supplement as of June 30, 2006 for children under the age of 6 and June 30, 2007 for 6-year-old children.

11 This measure was introduced in Budget 2006, effective May 2, 2006. The amount of the tax expenditure for this measure has been adjusted downward for all years, reflecting improvements in data and methodology.

12 Projections of this tax expenditure for 2008 and 2009 are based on preliminary tax return information. The significant decline of this tax expenditure in 2008 was followed by an unexpected decline of a similar magnitude in 2009, despite the fact that Canadian equity markets recovered a large part of their losses in the second half of 2009. This measure was changed in Budget 2010, effective March 4, 2010. See the "What's New in the 2010 Report" section for details.

13 Budget 2008 increased the maximum daily residency deduction by 10% from $15 to $16.50, effective 2008.

14 The amount of the tax expenditure for this measure has been adjusted upward for all years, reflecting improvements in data and methodology.

15 This measure was announced in Budget 2007, effective 2007. Budget 2009 enhanced this measure, effective 2009.

[16] This measure was introduced in Budget 2005, effective 2005.

[17] This measure was introduced in Budget 2007, effective 2007.

[18] Budget 2007 and the 2007 Economic Statement enhanced this credit, effective 2007. Budget 2009 enhanced the credit, effective 2009.

[19] Budget 2007 and the 2007 Economic Statement enhanced this credit, effective 2007. Budget 2009 enhanced the credit, effective 2009.

[20] This measure was introduced in Budget 2010, effective 2010. See the "What's New in the 2010 Report" section for details.

[21] Budget 2006 extended the lifetime capital gains exemption (LCGE) to qualifying fishing property, effective May 2, 2006. Budget 2007 announced an increase in the LCGE to $750,000 from $500,000, effective March 19, 2007.

[22] Deferred income from 2004 due to the effects of the outbreak of avian flu in British Columbia was reported in 2005, resulting in a negative tax expenditure for that year.

[23] This measure was expanded to include prescribed flood or excessive moisture regions on March 5, 2009.

[24] This measure was introduced in Budget 2007. This tax expenditure represents the deferral of federal income taxes on interest income accruing in the accounts as well as on government contributions to the accounts, less the amount of federal income taxes payable on withdrawals. The increase of this tax expenditure for 2009 reflects a reduction in the aggregate amount of taxable withdrawals from the accounts.

[25] The Net Income Stabilization Account (NISA) and the Canadian Farm Income Program were replaced by the Canadian Agricultural Income Stabilization Program, with the effect that government contributions under NISA ceased as of December 31, 2003. All funds in participant accounts will have been paid out by March 31, 2009. Tax expenditure estimates and projections reflect the wind-down schedule.

[26] Estimates and projections reflect a change in methodology from the 2009 report to take into account the tax revenue associated with the incremental gain that arises upon the disposal of a flow-through share as a result of the deemed zero cost base of such shares.

[27] The credit was introduced on a temporary basis in 2000 and has been extended since. It is currently set to expire on March 31, 2011. See the "What's New in the 2010 Report" section for details.

[28] The tax expenditure is negative for 2007 and subsequent years because the positive tax expenditure associated with new spending in those years is more than offset by the negative tax expenditure resulting from reclassifications that occurred in previous years.

[29] Projections for 2008 and 2009 are based on preliminary tax return information. This tax expenditure does not take into account the tax value of current-year capital losses applied against previous-year capital gains.

[30] The Tax-Free Savings Account was introduced in Budget 2008, effective January 1, 2009.

[31] Budget 2007 announced an increase in the lifetime capital gains exemption to $750,000 from $500,000, effective March 19, 2007.

[32] This measure was introduced in Budget 2006, effective 2007. Budget 2007 enhanced this measure for children with disabilities.

[33] This measure was changed in Budget 2010, effective after March 4, 2010. See the "What's New in the 2010 Report" section for details.

[34] Budget 2005 increased the maximum amount of the supplement from $571 to $750 per year, effective 2005, and Budget 2006 subsequently increased the maximum amount from $767 to $1,000, effective 2006.

[35] The Age Credit amount was increased by $1,000, to $5,066 from $4,066, in the Tax Fairness Plan (announced October 31, 2006 and confirmed in Budget 2007), effective January 1, 2006. Budget 2009 increased the amount by $1,000, to $6,408 from $5,408, effective 2009.

[36] The decline in this tax expenditure in 2006, 2007 and 2009 is mainly explained by the increase in non-taxpaying seniors due to increases in the Basic Personal Amount and other non-refundable credits relevant to seniors (such as the Age Credit).

[37] Although this measure provides tax relief for individuals, it is implemented through the corporate income tax system. Tax expenditure amounts are shown under "investment income credited to life insurance policies" in the corporate income tax table.

[38] The decline in this tax expenditure in 2007 generally reflects the increase in non-taxpaying low-income earners due to increases in the Basic Personal Amount and the Eligible Dependant Amount, as well as the introduction of the Child Tax Credit. The decline in 2009 generally reflects the Budget 2009 increase in the Basic Personal Amount and related amounts.

[39] This measure was introduced in Budget 2007, effective 2008.

[40] Budget 2006 doubled the maximum amount that can be claimed under the Pension Income Credit to $2,000 from $1,000 for the 2006 and subsequent taxation years. The introduction of pension income splitting in 2007 increases the number of individuals claiming the Pension Income Credit and thus increases the value of this tax expenditure (i.e. spouses who previously did not have pension income, and thus could not claim the credit, now receive eligible pension income transferred from their spouse, allowing them to claim the Pension Income Credit).

[41] This measure, announced on October 31, 2006 in the Tax Fairness Plan and confirmed in Budget 2007, allows Canadian residents to allocate up to one-half of eligible pension income to their resident spouse or common-law partner, effective 2007. The amount of the tax expenditure for this measure has been adjusted upwards for all years, reflecting improvements in data and methodology.

[42] Estimates and projections vary from those in last year's report due to changes in tax rates on contributions and withdrawals and estimated levels of assets, contributions, investment income, capital gains/losses and withdrawals. In general, tax expenditure estimates and projections will be higher in years in which assets grow strongly, reflecting the tax forgone on that investment income, and lower in years in which assets grow slowly or decline.

[43] The present-value estimates reflect the lifetime cost of a given year's contributions. This definition is different from that used for the cash-flow estimates and thus the two sets of estimates are not directly comparable. Further information on how these estimates are calculated is contained in the paper "Present-Value Tax Expenditure Estimates of Tax Assistance for Retirement Savings," which was published in the 2001 edition of this report. The present-value estimates do not reflect the potential effect of Tax-Free Savings Accounts on the average tax rate used to calculate the present value of the forgone tax on investment income.

[44] This measure was changed in Budget 2010, effective January 1, 2010. See the "What's New in the 2010 Report" section for details.

[45] This measure was introduced in Budget 2009. The projection for 2009 is based on preliminary tax return information.

[46] This temporary measure was introduced in Budget 2009 for the 2009 tax year only (for eligible expenses incurred after January 27, 2009 and before February 1, 2010). The projection in this year's publication is based on 2009 tax return information. For reference purposes, the following box summarizes the approach used to make the Budget 2009 projection.

Cost Estimate of the Home Renovation Tax Credit (HRTC)

The cost of the HRTC was estimated at the time of Budget 2009 using the 2006 Survey of Household Spending from Statistics Canada. This survey provides micro-data on consumer spending including expenses on home renovations and alterations.

The 2006 Survey of Household Spending data were adjusted to reflect various factors such as growth in population and average spending projected over the 2006–2009 period. The potential effect of the temporary credit on household renovation spending was also taken into account—i.e. to take advantage of the credit, homeowners may accelerate their planned renovation projects or spend more than originally anticipated.

On the basis of these assumptions, it was estimated that about 4.6 million owner-occupied households would spend more than $1,000 on eligible expenditures over the eligibility period, for a total estimated cost for the Government of about $3 billion. The table below provides additional details on the costing of the credit.

Number of owner-occupied households in 2009[a]	8.9 million
Number of owner-occupied households spending more than $1,000 on expenses eligible for the HRTC[b]	4.6 million
Average amount of eligible expenses claimed per household[c]	$5,500
Average HRTC credit[d]	$650
Total estimated cost for the Government[e]	$3 billion

[a] Estimated using the 2006 Survey of Household Spending from Statistics Canada, adjusted to reflect 2006–2009 household growth, using housing starts.

[b] Estimated using the 2006 spending pattern adjusted to reflect 2006–2009 growth in average spending and the impact of the HRTC on spending behaviour (i.e. stimulus effect).

[c] After application of the $10,000 limit (i.e. households spending more than $10,000 are considered to have spent $10,000).

[d] $5,500 minus $1,000 times the credit rate (the credit rate outside Quebec is 15%; the effective credit rate in Quebec is 12.525% as a result of the 16.5% federal abatement).

[e] Average credit ($650) times number of households (4.6 million).

[47] The estimates and projections reflect the cyclicality of the housing market and its impact on the number of residence resales and on the average price of residences. Estimates and projections are based on housing market data and resale forecasts provided by Canada Mortgage and Housing Corporation and the Canadian Real Estate Association. Data on major additions and renovations obtained from Statistics Canada are used to estimate the average amount of capital expenditures on principal residences, which reduces the estimated amount of capital gains.

[48] This measure was introduced in Budget 2006, effective July 1, 2006. Budget 2007 extended the credit to electronic fare cards and weekly passes used on an ongoing basis. The amount of the tax expenditure has been adjusted upwards for all years, reflecting improvements in data and methodology.

[49] The estimates and projections include the revenue impact associated with both the enhanced Dividend Tax Credit introduced in 2006, mainly applicable to dividends from large businesses, and the basic Dividend Tax Credit applicable to other dividends, mostly from small businesses. Budget 2008 announced reductions in the enhanced Dividend Tax Credit rate and gross-up factor beginning in 2010.

[50] This tax expenditure represents the revenue impact resulting from the application of prior years' capital losses against the net capital gains realized in the current year.

[51] Estimates and projections include contributions paid to the Quebec Parental Insurance Plan, which took effect January 1, 2006. Effective in 2010, a tax credit is also provided in respect of premiums paid by a self-employed individual under the Employment Insurance Act.

[52] The Basic Personal Amount has been increased by amounts over and above the inflation protection provided by full indexation (due to changes in Budget 2005, Budget 2006, the 2007 Economic Statement and Budget 2009).

Table 2

Corporate Income Tax Expenditures*

	Estimates[1]				Projections[1]	
	2005	2006	2007	2008	2009	2010
	($ millions)					
Charities, Gifts and Political Contributions						
Deductibility of charitable donations	430	500	430	435	435	405
Donations of publicly listed securities[2]						
Deductibility of donations[3]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Reduced inclusion rate for capital gains	18	36	55	106	48	77
Total tax expenditure	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Donations of ecologically sensitive land[2]						
Deductibility of donations	S	5	S	4	10	7
Reduced inclusion rate for capital gains	S	3	22	3	11	7
Total tax expenditure	S	7	24	7	21	14
Donations of cultural property[2]						
Deductibility of donations	17	19	8	5	5	5
Non-taxation of capital gains	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total tax expenditure	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deductibility of gifts of medicine	–	–	S	S	S	S
Deductibility of gifts to the Crown	S	S	S	S	S	S
Non-taxation of registered charities	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-taxation of other non-profit organizations (other than registered charities)	135	160	175	125	95	100
Political Contribution Tax Credit[4]	S	S	S	–	–	–
Culture						
Canadian Film or Video Production Tax Credit	175	190	210	220	220	220
Non-deductibility of advertising expenses in foreign media	S	S	S	S	S	S
Federal-Provincial Financing Arrangements						
Income tax exemption for provincial and municipal corporations	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Transfer of income tax points to provinces	1,645	2,045	2,070	1,725	1,950	1,925
Logging Tax Credit	20	20	20	5	4	5
General Business and Investment						
Accelerated deduction of capital costs	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Capital Gains						
Deferal through five-year capital gain reserve	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Partial inclusion of capital gains	4,245	5,845	5,985	4,310	3,030	3,320
Taxation of capital gains upon realization	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

* The elimination of a tax expenditure would not necessarily yield the full tax revenues shown in the table. See the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections* (available on the Department of Finance website) for a discussion of the reasons for this.

Table 2 *(cont'd)*

Corporate Income Tax Expenditures*

	Estimates[1]				Projections[1]	
	2005	2006	2007	2008	2009	2010
	($ millions)					
General Business and Investment *(cont'd)*						
Investment Tax Credits						
Atlantic Investment Tax Credit						
Earned and claimed in current year	135	90	120	65	125	120
Claimed in current year but earned in prior years	260	75	170	75	165	160
Earned in current year but carried back to prior years	6	6	3	3	7	7
Total tax expenditure	401	171	293	143	297	287
Scientific Research and Experimental Development Investment Tax Credit						
Earned and claimed in current year	2,050	2,135	2,220	2,420	2,310	2,450
Claimed in current year but earned in prior years	580	590	1,045	900	860	910
Earned in current year but carried back to prior years	90	90	85	165	110	110
Total tax expenditure	2,720	2,815	3,350	3,485	3,280	3,470
Apprenticeship Job Creation Tax Credit						
Earned and claimed in current year	–	18	51	67	65	65
Claimed in current year but earned in prior years	–	S	3	10	12	12
Earned in current year but carried back to prior years	–	S	3	5	5	5
Total tax expenditure	–	19	57	82	82	82
Investment Tax Credit for Child Care Spaces	–	–	S	S	S	S
Small Business						
Deduction of allowable business investment losses	17	10	9	12	11	11
Low tax rate for small businesses[5]	3,300	3,780	4,650	4,685	4,525	3,920
Non-taxation of provincial assistance for venture investments in small businesses	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
International						
Exemption from Canadian income tax of income earned by non-residents from the operation of a ship or aircraft in international traffic	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Exemption from tax for international banking centres[6]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Exemptions from non-resident withholding tax						
Dividends[7]	965	985	1,360	2,070	1,635	1,815
Interest[8]	1,575	2,050	1,945	1,585	1,510	1,600
Rents and royalties	305	235	260	300	290	305
Management fees	90	100	110	120	115	120
Non-taxation of life insurance companies' world income	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tax treatment of active business income of foreign affiliates of Canadian corporations and deductibility of expenses incurred to invest in foreign affiliates	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table 2 *(cont'd)*

Corporate Income Tax Expenditures*

	Estimates[1]				Projections[1]	
	2005	2006	2007	2008	2009	2010
	($ millions)					
Sectoral Measures						
Farming						
Cash basis accounting	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deferral of income from destruction of livestock	S	S	S	S	S	S
Deferral of income from sale of livestock during drought, flood or excessive moisture years[9]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deferral of income from grain sold through cash purchase tickets	17	-8	-25	-28	8	-6
AgriInvest (farm savings account)[10]	–	–	–	3	5	5
Flexibility in inventory accounting	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Agricultural co-operatives—patronage dividends issued as shares	–	3	3	7	6	6
Exemption for farmers' and fishers' insurers	6	7	4	S	4	4
Natural Resources						
Corporate Mineral Exploration and Development Tax Credit	18	S	18	25	23	24
Deductibility of contributions to a qualifying environmental trust	7	3	S	S	S	S
Earned depletion[11]	38	51	6	5	6	6
Net impact of the resource allowance and the limited deductibility of Crown royalties and mining taxes[12]	44	17	S	–	–	–
Tax rate on resource income[13]	-585	-430	-30	–	–	–
Transitional arrangement for the Alberta Royalty Tax Credit[14]	S	S	S	–	–	–
Flow-through share deductions[15]	160	110	120	70	65	65
Reclassification of expenses under flow-through shares[16]	4	-5	-3	-4	-3	-2
Other Sectors						
Exemption from branch tax for transportation, communications, and iron ore mining corporations	10	S	7	37	13	14
Film or Video Production Services Tax Credit	105	110	95	100	100	100
Low tax rate for credit unions	54	63	71	80	71	61
Surtax on the profits of tobacco manufacturers[17]	-50	n.a.	n.a.	n.a.	n.a.	n.a.
Other Items						
Deductibility of countervailing and anti-dumping duties	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deductibility of earthquake reserves	S	S	S	S	S	S
Deferral through use of billed-basis accounting by professional corporations	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Holdback on progress payments to contractors	30	50	50	50	45	50
Investment income credited to life insurance policies	280	295	280	270	275	260
Tax status of certain federal Crown corporations[18]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table 2 *(cont'd)*

Corporate Income Tax Expenditures*

	Estimates[1]				Projections[1]	
	2005	2006	2007	2008	2009	2010
	($ millions)					
Memorandum Items						
Avoidance of Double Taxation—Integration of Personal and Corporate Income Tax						
Investment corporation deduction	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Refundable capital gains for investment and mutual fund corporations	345	415	430	90	50	52
Refundable taxes on investment income of private corporations						
Additional Part I tax[19]	-1,495	-1,930	-2,165	-2,410	-2,010	-2,035
Part IV tax	-2,155	-2,550	-3,105	-4,740	-3,660	-3,510
Dividend refund	4,400	5,345	6,135	8,335	6,930	6,650
Net tax expenditure	750	865	865	1,185	1,260	1,105
Loss Offset Provisions						
Capital loss carry-overs						
Net capital losses carried back	84	73	205	535	605	120
Net capital losses applied to current year	360	640	640	270	220	240
Farm and fishing loss carry-overs						
Farm and fishing losses carried back	15	14	13	15	17	10
Farm and fishing losses applied to current year	42	56	42	39	55	36
Non-capital loss carry-overs						
Non-capital losses carried back	1,775	1,685	2,140	6,145	3,050	1,700
Non-capital losses applied to current year	4,840	4,535	4,775	3,775	3,810	3,820
Other						
Deferral through capital gains rollovers	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deduction for intangible assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Partial deduction of meals and entertainment expenses	300	325	335	290	275	265
Patronage dividend deduction	315	360	470	420	340	325

Notes:

1 Unless otherwise indicated in the footnotes, changes in the estimates and projections from those in last year's report, as well as variations from year to year, result from new data and changes in the economic variables affecting the tax expenditures. Changes from last year's report may also reflect the availability of new data sources as well as methodological improvements, in which case the estimates and projections presented in this year's publication may not be comparable to those published in previous reports. Estimates and projections also reflect the impact of reductions in the general corporate income tax rate from 21% to 19.5% on January 1, 2008, 19.0% on January 1, 2009 and 18.0% on January 1, 2010. The 4% corporate surtax (equivalent to a 1.12% corporate income tax rate) was eliminated on January 1, 2008. Further details on the tax expenditures presented in this table are available in the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections.*

2 The total tax expenditure cost of donations of these types of assets has two components: the revenue forgone as a result of the reduced inclusion rate and the cost of the deductibility of charitable donations. Budget 2006 reduced the inclusion rate for capital gains on donations of publicly listed securities and ecologically sensitive land from 25% to zero, effective May 2, 2006. Budget 2007 extended this provision to include donations of eligible securities to private foundations, effective March 19, 2007.

3 There are no data available that allow this tax expenditure to be separated from the "Deductibility of charitable donations" category. Therefore, the value of this tax expenditure is included under "Deductibility of charitable donations."

4 The Federal Accountability Act prohibits political contributions from corporations as of January 1, 2007. Some tax expenditure occurred in 2007, however, as many firms reporting income in the 2007 tax year earned a portion of that income in the 2006 calendar year.

[5] The amount of this tax expenditure reflects the impact of Budget 2006 and Budget 2009, which increased the amount of small business income eligible for the lower tax rate, and Budget 2004, which accelerated the Budget 2003 increase. In addition, Budget 2006 reduced the small business tax rate and the 2007 Economic Statement accelerated the rate reduction. The reduction in the tax expenditure between 2008 and 2010 partly reflects the reduction in the general corporate income rate.

[6] For confidentiality reasons, estimates and projections for the 2005 to 2010 period are not published.

[7] This category includes the tax expenditure attributable to the exemption of estate and trust income distributions, including distributions by income trusts.

[8] Taxpayer information used to estimate this tax expenditure no longer allows for the identification of government debt, which was previously excluded from this tax expenditure. As such, estimates and projections presented in this year's publication are not comparable to those presented in previous years' publications.

[9] This measure was expanded to include prescribed flood or excessive moisture regions on March 5, 2009.

[10] This measure was introduced in Budget 2007. See footnote 24 in the personal income tax table for further details on this measure.

[11] Additions to earned depletion pools were eliminated as of January 1, 1990. The tax expenditure reflects use of the existing earned depletion pools.

[12] The tax expenditure is the revenue cost of the resource allowance net of non-deductible Crown royalties and provincial mining taxes. Over a five-year period beginning in 2003, the resource allowance was phased out and a deduction for Crown royalties and mining taxes phased in, so that by 2007, this tax expenditure is eliminated. Costs for 2007 relate to companies with a tax year that ends on a date other than December 31, for which the 2007 tax year includes a portion of calendar-year 2006.

[13] The tax rate on resource income was reduced to the general corporate income tax rate over a five-year phase-in period beginning in 2003. Although the separate rate for resource income was eliminated as of 2007, there are still revenues in that year associated with companies having a tax year that ends on a date other than December 31, for which the 2007 tax year includes some income earned in calendar-year 2006.

[14] The Alberta government announced on September 21, 2006 that the Alberta Royalty Tax Credit (ARTC) program would be discontinued effective January 1, 2007. Although the ARTC no longer exists as of 2007, there are still small costs in that year associated with the related federal transitional measure for companies with off-calendar taxation years, for which the 2007 tax year includes some royalty credits earned in 2006.

[15] The estimates and projections reflect a change in methodology from the 2009 report to take into account the tax revenue associated with the incremental gain that arises upon the disposal of a flow-through share as a result of the deemed zero cost base of such shares.

[16] The overall tax expenditure is negative for 2006 and subsequent years because the positive tax expenditure associated with new spending in those years is more than offset by the negative tax expenditure resulting from reclassifications that occurred in previous years.

[17] For confidentiality reasons, estimates and projections for the 2006 to 2010 period are not published.

[18] See the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections* for a description of this measure. For confidentiality reasons, estimates and projections for the 2005 to 2010 period are not published.

[19] This item includes the additional 6 ⅔% refundable tax on investment income as well as the Part I tax paid on investment income in excess of the benchmark rate.

Table 3

GST Tax Expenditures*

	Estimates[1]				Projections[1]	
	2005	2006[2]	2007	2008[2]	2009	2010
	($ millions)					
Status Indians and Aboriginal Self-Governements						
Non-taxation of personal property of status Indians and Indian bands on reserve	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Refunds for Aboriginal self-governments	S	5	5	5	5	5
Business						
Exemption for domestic financial services	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Exemption for ferry, road and bridge tolls	15	15	15	10	10	10
Exemption and rebate for legal aid services	25	25	25	25	25	25
Non-taxability of certain importations	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rebate for foreign visitors[3]	80	70	20	n.a.	n.a.	n.a.
Rebate for foreign conventions and tour packages[3]	n.a.	n.a.	10	10	10	15
Small suppliers' threshold[4]	280	275	265	230	220	230
Zero-rating of agricultural and fish products and purchases	S	S	S	S	S	S
Zero-rating of certain purchases made by exporters	S	S	S	S	S	S
Charities and Non-Profit Organizations						
Exemption for certain supplies made by charities and non-profit organizations[5]	810	800	805	715	710	740
Rebate for registered charities	295	305	295	255	275	290
Rebate for qualifying non-profit organizations	75	75	70	65	70	75
Education						
Exemption for educational services (tuition)	525	505	495	435	435	455
Rebate for book purchases made by qualifying public institutions	30	30	25	25	25	25
Rebate for colleges	80	80	85	75	85	90
Rebate for schools	425	430	415	360	385	410
Rebate for universities	270	260	240	220	235	250
Health Care						
Exemption for health care services	665	675	685	635	670	700
Rebate for hospitals	515	515	525	480	515	550
Zero-rating of medical devices	185	190	190	165	170	175
Zero-rating of prescription drugs	710	730	740	645	655	685
Households						
Exemption for child care and personal services	155	145	140	120	125	130
GST/HST Credit	3,450	3,510	3,575	3,630	3,720	3,850
Zero-rating of basic groceries	3,905	3,720	3,595	3,160	3,190	3,340

* The elimination of a tax expenditure would not necessarily yield the full tax revenues shown in the table. See the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections* (available on the Department of Finance website) for a discussion of the reasons for this.

Table 3 *(cont'd)*

GST Tax Expenditures*

	Estimates[1]				Projections[1]	
	2005	2006[2]	2007	2008[2]	2009	2010
	($ millions)					
Housing						
Exemption for sales of used residential housing and other personal-use real property	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Exemption for residential rent (long-term)	1,445	1,305	1,265	1,115	1,180	1,235
Rebate for new housing	1,010	845	725	670	610	655
Rebate for new residential rental property	55	50	55	50	45	45
Municipalities						
Exemption for municipal transit	165	160	160	145	145	150
Exemption for water and basic garbage collection services	220	230	230	220	220	230
Rebate for municipalities	1,730	1,805	1,805	1,735	1,860	1,985
Memorandum Items						
Recognition of Expenses Incurred to Earn Income						
Rebate to employees and partners	115	100	85	75	75	75
Other						
Partial input tax credits for meals and entertainment expenses[4]	155	155	150	130	115	120

Notes:

1 Unless otherwise indicated in the footnotes, changes in the estimates and projections from those in last year's report, as well as variations from year to year, result from new data and changes in the economic variables affecting the tax expenditures. Changes from last year's report may also reflect the availability of new data sources as well as methodological improvements, in which case the estimates and projections presented in this year's publication may not be comparable to those published in previous reports. Further details on the tax expenditures presented in this table are available in the 2010 edition of *Tax Expenditures: Notes to the Estimates/Projections.*

2 The GST rate was lowered from 7% to 6% effective July 1, 2006, and to 5% effective January 1, 2008. These rate reductions have the effect of lowering the cost of tax expenditures starting in 2006 from what they otherwise would have been. This is not true of the GST/HST Credit, however, since it was unaffected by the rate reductions.

3 The Visitors' Rebate Program (VRP) was replaced by the Foreign Convention and Tour Incentive Program effective April 1, 2007. Estimates for the VRP do not include amounts credited by suppliers at the point of sale.

4 The amount of the tax expenditure has been adjusted for all years starting in the 2010 publication, reflecting improvements in methodology.

5 Estimates and projections for this measure appear for the first time because reliable data are now available.

Part 2
Research Reports

Taxes and the Preferred Source of Corporate Finance

Introduction

In most countries, interest payments are deductible for corporate income tax purposes while dividend payouts are not, so there is often a presumption that debt is the tax-favoured source of finance. Such a distortion could encourage higher than optimal debt-equity ratios, potentially exposing firms to a greater risk of bankruptcy. It could also disadvantage firms that invest heavily in knowledge assets, which cannot be used as collateral for debt, and innovative firms that may need to finance expansion with risk capital.[1] To determine if debt financing is favoured by the tax system, however, both personal and corporate taxes must be considered. For example, while interest payments are deductible from corporate income tax, they may be taxable in the hands of the recipient, which would raise the cost of using debt to finance investment. Nevertheless, debt could still be tax-preferred relative to new equity issues if the sum of personal income tax on dividends and corporate income tax on profits distributed as dividends is greater than the personal income tax on interest.

Assessing the role of taxes in corporate financing decisions is complicated by the fact that there is some ambiguity about which tax rates are relevant (see box entitled "Taxes and the Cost of Finance"). Business investment in Canada is financed by domestic and foreign investors, who face different tax rates on their investment income. In principle, any one of these investor classes could be playing the decisive role in determining the cost of finance of firms. If a taxable individual residing in Canada is determining the cost of finance, then only domestic income tax parameters are relevant, but if a taxable resident of a foreign country is determining the cost of finance, the personal income taxes of that country are relevant. If a non-taxable investor is determining the cost of finance, then personal income taxes do not need to be considered and debt will always be the tax-preferred source of finance. Finally, the investor determining the cost of corporate finance may be different for large and small firms and may vary over time.

This paper provides an historical perspective on the tax-preferred form of finance in Canada and presents an international comparison for 2010. The tax burdens calculated in this paper[2] suggest that if the cost of finance for large firms in Canada is determined by a taxable Canadian resident, there was a tax bias in favour of debt financing until 2010, but substantial corporate income tax reductions, a lower effective tax rate on capital gains and changes in the tax treatment of income from shares have removed the tax preference for debt financing. In contrast, if a taxable foreign resident is determining the cost of finance for large firms, debt financing continues to be tax-favoured. For small Canadian firms, which are assumed to be financed by a taxable Canadian resident, the results suggest that debt financing has never been tax-favoured due to the lower corporate income tax rate for small business and the Lifetime Capital Gains Exemption.

[1] See Organisation for Economic Co-operation and Development (2008) for a detailed examination of how tax-distorted financing decisions can harm economic performance.

[2] Tax burdens are derived from statutory corporate income tax rates and statutory personal income tax rates on interest, dividends and capital gains, assuming that individuals pay tax at the top marginal rate. Key tax changes impacting on the tax burden are identified in the discussion of results. The tax rates used in this paper are those in effect as of July 2010; they are presented in Annex 1.

Taxes and the Cost of Finance

Corporations finance investment through debt, new equity and retained earnings. The costs of these financing sources are linked by investors' efforts to obtain the same return on all financial assets, after adjustment for risk and taxes. For example, corporate bonds require a higher rate of return than their secure government counterparts, but the premium will be set at the rate thought to compensate for the greater risk so that investors will expect to receive the same after-tax rate of return on the two asset classes. The size of the risk premium on corporate bonds will be determined by the investor, or class of investor, who could be induced to hold more corporate bonds by a very small increase in their relative rate of return. Similarly, the impact of taxes on the relative rate of return on equity will be determined by the investor, or class of investor, that could be induced to hold more equity by a small reduction in the relative tax burden on equity.

More generally, there will be an investor class that determines the required rate of return on each corporate financial instrument because of its sensitivity to changes in relative rates of return, not necessarily because of its share of the market.[1] If this investor class is taxable, changes in tax rates on corporate profits and investment income will cause pre-tax rates of return on financial assets to change as well.

1 Note that if no investor class is active in all asset markets, differences in risk-adjusted rates of return may emerge, but these differentials would be eliminated by the arbitrage activities of profit-seeking traders.

Canadian Firms Financed by Taxable Canadian Residents—Historical Perspective

Large Corporations

Chart 1 depicts from 1980 to 2013 the total tax burden on debt, new equity and retained earnings supplied to large Canadian corporations by individuals residing in Canada taxed at the top marginal rate. The total tax burden takes into account both corporate and personal income tax paid at the federal and provincial or territorial levels. The total tax burden on debt is the amount of personal income tax on interest income since interest payments are deductible for corporate income tax purposes. For new equity issues, the return to the investor takes the form of dividends,[3] so the total tax burden consists of the corporate income tax on profits distributed as dividends plus the personal income tax on the dividends. Personal and corporate income taxes are integrated in Canada, meaning that the personal income tax on dividends received from Canadian corporations is reduced by a credit for the corporate income taxes that are presumed to have been paid by the corporation.[4] When a firm uses retained earnings to finance investment there is no direct payment to shareholders, but everything else being equal, the value of the firm increases, so the return to the investor takes the form of a capital gain. The total tax burden therefore consists of corporate income tax on profits plus the personal income tax on the taxable amount of the capital gain resulting from higher retained earnings. The tax burden calculations are set out in Table 1, using 2012 marginal tax rates and other tax parameters.

3 It could be argued that the return on new equity is sometimes realized in the form of a capital gain because of share buybacks, but for simplicity it is assumed that the return is paid out in dividends.

4 The Dividend Tax Credit mechanism calculates a proxy for pre-tax corporate profits and then provides a tax credit to individuals in recognition of corporate-level tax. Under this approach an individual is first required to include the grossed-up amount of dividends in income. Using this gross-up the tax system in effect treats the individual as having earned directly the amount that the corporation is assumed to have earned in order to pay the dividend. The Dividend Tax Credit then compensates the individual for corporate-level tax presumed to have been paid on that amount.

Table 1

Total Tax Burden[1]
Large Canadian Corporations Financed by Taxable Canadian Residents[2] (2012)

Tax Parameters		
Tax Rates		
On corporate income	(1)	26.1%
On personal income (top marginal rate)	(2)	45.3%
Capital Gains		
Income inclusion rate	(3)	50.0%
Tax rate	(4)=(2)*(3)	22.7%
Dividend Taxation		
Gross-up rate	(5)	38.0%
Credit rate	(6)	25.1%
Tax Burden by Financing Source		
Tax Burden on Debt		45.3%
Retained Earnings		
Gross-of-tax corporate profits	(7)	$100.00
Corporate income tax	(8)=(1)*(7)	$26.10
Net-of-tax retained earnings	(9)=(7)-(8)	$73.90
Capital gains tax	(10)=(4)*(9)	$16.74
Tax Burden on Retained Earnings	=[(8)+(10)]/(7)	42.8%
New Equity		
Net-of-tax profits distributed as dividends	(9)	$73.90
Grossed-up dividends	(11)=(9)*[1+(5)]	$101.98
Personal income tax on dividends	(12)=(2)*(11)	$46.21
Dividend Tax Credit	(13)=(6)*(11)	$25.60
Net personal income taxes on dividends	(14)=(12)-(13)	$20.61
Tax Burden on New Equity	=[(14)+(8)]/(7)	46.7%

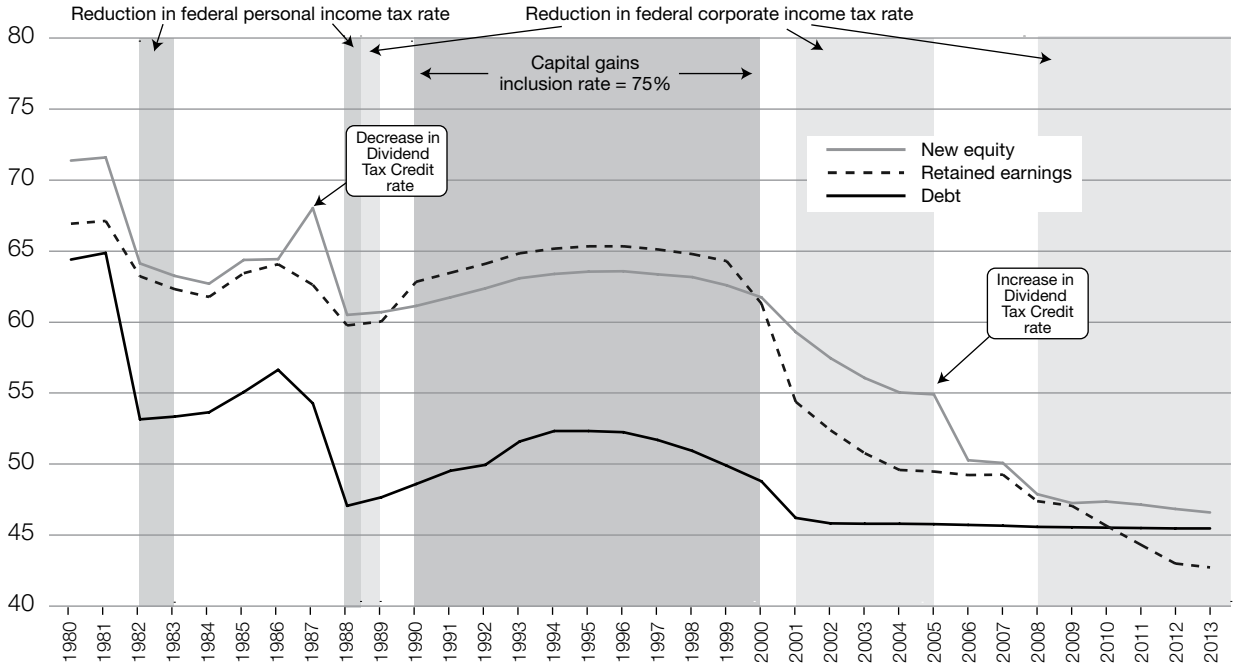
[1] Combined federal and provincial personal and corporate income tax rates.

[2] Individuals residing in Canada taxed at the top marginal rate. Firms are assumed to be paying taxes.

As can be seen in Chart 1, the total tax burdens on debt, retained earnings and new equity have varied substantially over time, generally declining as tax rates were brought down. Reductions in the federal top personal income tax rate in 1982 (from 43% to 34%) and 1988 (from 34% to 29%) decreased the tax burden on all sources of finance. Retained earnings became the least preferred type of finance in the 1990s when the capital gains inclusion rate was increased from 50% to 75%. Prior to 2006, dividends from small and large corporations received the same Dividend Tax Credit rate, which was less favourable for shareholders of large corporations since the credit did not fully offset the corporate income tax imposed on large corporations. Since 2006, dividends have been separated into two categories: eligible dividends (generally from large corporations) and other dividends (from small Canadian Controlled Private Corporations, or CCPCs). The treatment of dividends from small

CCPCs was not changed in 2006, but the credit rate for dividends from large corporations was increased, which reduced the tax burden on new equity. Finally, actual and legislated reductions in the federal corporate income tax rate from 29.1% in 2000 to 15% by 2012[5] substantially lower the tax burden on new equity and retained earnings.

Chart 1
Total Tax Burden[1]
Large Canadian Corporations Financed by Taxable Canadian Residents[2] **(1980–2013)**



[1] Combined federal and provincial personal and corporate income tax rates.
[2] Individuals residing in Canada taxed at the top marginal rate. Firms are assumed to be paying taxes.

Overall, debt was the tax-preferred type of finance until 2010 and will still be slightly favoured over new equity until 2013. Retained earnings become the tax-preferred type of finance starting in 2011. However, this calculation is based on the assumption that the holding period for the shares is one year. As the holding period increases, the effective tax rate on capital gains declines, reflecting the benefit of a tax deferral. Depending on the length of the holding period, retained earnings could have been the tax-preferred type of finance beginning in 2003. Annex 2 presents a calculation of the effective tax rate on capital gains when a security is held for 5, 10 and 20 years.

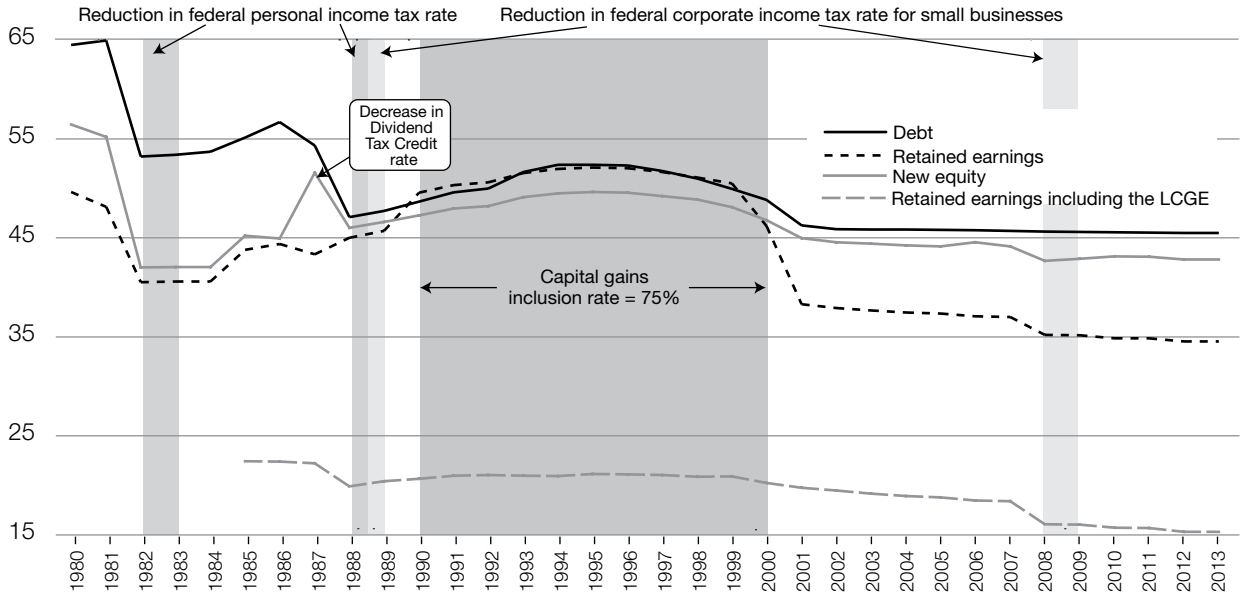
[5] Over the same period, the weighted average provincial-territorial corporate income tax rate is expected to decline from 13.4% to 11.1%.

Small Corporations

Chart 2 depicts the total tax burden on investments in small CCPCs in Canada from 1980 to 2013, assuming the cost of finance is determined by a taxable resident of Canada. For investments financed through debt, the tax burden is the same as for large firms, since it is determined by the top personal income tax rate on interest income. The tax burden on new equity issues has also been similar for small and large firms since 2006, when the Dividend Tax Credit was increased for large firms. However, because of the lower corporate income tax rate for small firms, the total tax burden on retained earnings is much smaller. As a result, debt has never been the tax-preferred source of finance for small business. Except during the 1990s when the capital gains inclusion rate was 75%, retained earnings have always been the tax-favoured form of finance.

Chart 2 also shows the tax burden on retained earnings when capital gains are eligible for the Lifetime Capital Gains Exemption (LCGE). Implemented in 1985, the LCGE provides a lifetime tax exemption on up to $750,000 of capital gains from the disposition of small business shares. With this exemption, the effective tax rate on capital gains is zero for some firms, which would make retained earnings by far the tax-preferred type of finance provided that capital gains on the investment are below the threshold. There is also a deferral of realized capital gains on the disposal of small business shares if the proceeds are reinvested in small business shares. As discussed above, a deferral lowers the effective tax rate on capital gains, but the impact is particularly difficult to quantify in this case.

Chart 2
Total Tax Burden[1]
Small Canadian Corporations[2] **Financed by Taxable Canadian Residents**[3] **(1980–2013)**



[1] Combined federal and provincial personal and corporate income tax rates.
[2] CCPCs eligible for the small business deduction.
[3] Individuals residing in Canada taxed at the top marginal rate. Firms are assumed to be paying taxes.

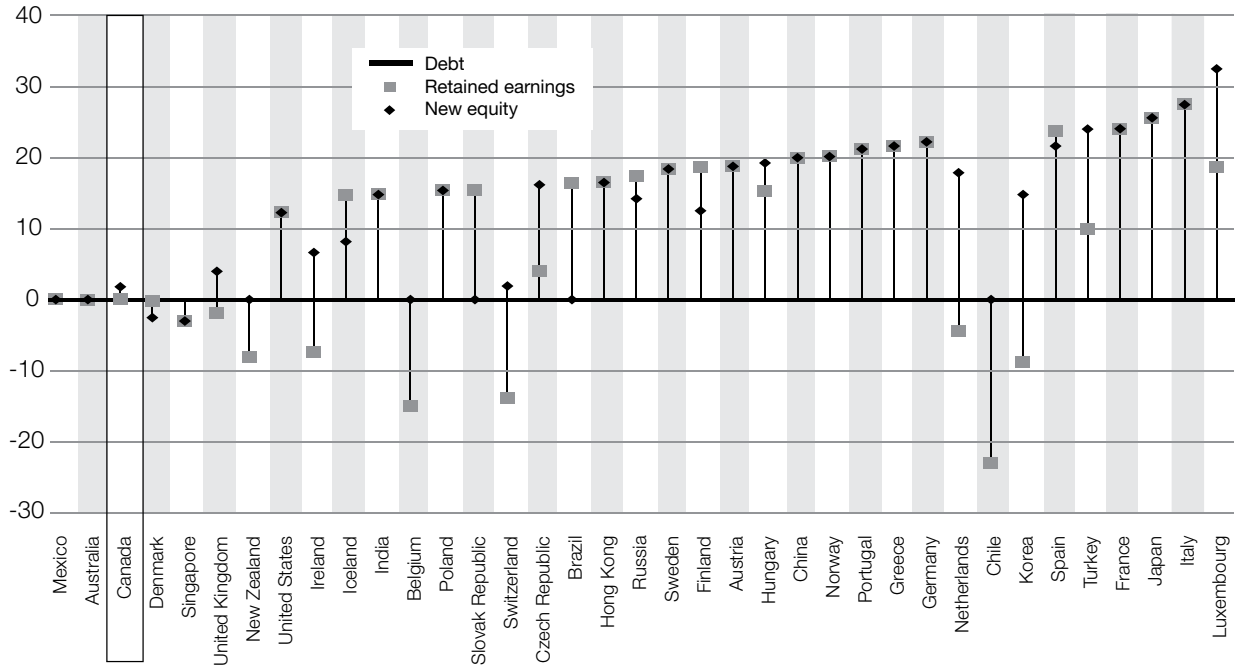
International Comparison

Chart 3 compares the total tax burden on the three corporate financing sources for large firms in 31 members of the Organisation for Economic Co-operation and Development (OECD), plus Brazil, Russia, India, China, Hong Kong Special Autonomous Region and Singapore in 2010. The chart highlights the degree of neutrality achieved across financing sources by showing the tax burden on retained earnings (squares) and new equity (diamonds) relative to debt. Points on the horizontal line indicate that the financing source has the same tax burden as debt, while points above the line indicate a less favourable tax treatment than debt and points below the line indicate a more favourable tax treatment than debt. The lowest point (line, square or diamond) for a given country indicates the tax-preferred type of finance in that country. These calculations are country-specific, indicating the relative tax burdens applicable to local taxable residents financing investment by a local corporation. The countries are ranked by ascending order of the spread between tax burdens on the three financing sources.

Chart 3

Deviation From the Total Tax Burden[1] on Debt
Large Corporations Financed by Taxable Local Residents[2] (2010)

percentage points



[1] Combined national and subnational personal and corporate income tax rates. Countries are ranked by the sum of the absolute gaps between financing sources.
[2] Individuals residing in each country taxed at the top marginal rate. Firms are assumed to be paying taxes.

The international comparison reveals that in 2010 only five countries (Australia, Canada, Denmark, Mexico and Singapore) have a neutral tax treatment of corporate financing decisions in the sense that the total tax burden is approximately equal for debt, retained earnings and new equity.[6] Despite reductions in corporate income tax rates in many countries over the last 20 years, debt is still the tax-preferred type of finance in 22 of the 32 non-neutral countries. Retained earnings are preferred in 8 countries while debt and new equity are equally preferred in 2 countries. On average, the tax burden on debt is 9.4 percentage points lower than on retained earnings and 12.7 percentage points lower than on new equity.

Tax Burden on Investment in Canada by Group of Seven (G-7) Residents

So far, the analysis has been limited to corporations financed by taxable individuals resident in the same country as the corporation. A substantial amount of investment in Canada is financed on global markets, so it is of interest to examine the tax burden by source of finance when the investor is a resident of a foreign country. Table 2 illustrates the total tax burden on investments in a large Canadian firm when the cost of finance is determined by an individual residing in one of the G-7 countries paying taxes at the top marginal rate. In this case, the firm pays corporate income tax in Canada, but the personal income tax burden is determined in the investor's country of residence, except when Canadian withholding taxes on dividends are higher than the personal income tax payable in the country of residence.[7] The table shows the tax burden on financing through retained earnings and new equity issues relative to debt. A positive entry in the table indicates a higher tax burden than on debt.

The comparison shows that when a large Canadian corporation is financed by taxable residents of other G-7 countries, the total tax burden on debt is almost always lower than on dividends or capital gains, making debt the tax-preferred source of finance. The exception is the United Kingdom, which recently increased the top personal income tax rate applicable to interest income and the top rate on capital gains, the net effect of which was to shift the tax advantage from debt financing to financing with retained earnings.[8] A lower effective tax rate on capital gains resulting from a longer assumed holding period of five years does not change the tax bias in favour of debt financing in the other G-7 countries (last column of the table). Furthermore, if the investor is non-taxable (a Canadian resident or not) then debt will always be preferred since its total tax burden will be nil while corporate income tax will be embedded in dividends and capital gains received by the tax-exempt investor.

[6] Recall that the tax burden on financing by retained earnings is calculated assuming shares are held for one year, which likely overstates the effective tax burden.

[7] The withholding tax rate on dividend payments to portfolio investors residing in other G-7 countries is 15%. The tax withheld is creditable against personal income tax payable in the country of residence of the recipient. Withholding tax is therefore only relevant if it exceeds domestic tax liabilities, which occurs for payments to Italian residents, who pay 12.5% tax on dividend income, and to Japanese residents, who pay 10% tax on dividend income.

[8] As of April 2010, the United Kindgom's top personal income tax rate increased from 40% to 50%; effective June 23, 2010, the 18% flat rate capital gains tax rate was increased to 28% for high income taxpayers.

Table 2

Deviation From the Total Tax Burden[1] on Debt
Large Canadian Corporations Financed by Taxable Residents of G-7 Countries[2] (2010)

		Retained Earnings Holding Period	
	New Equity	One Year	Five Years
		(percentage points)	
Canada	1.8	0.2	-2.0
France	2.8	2.8	0.4
Germany	21.7	21.7	19.5
Italy	27.6	25.8	24.6
Japan	20.1	16.6	15.6
United Kingdom	9.5	-0.7	-3.0
United States	4.7	4.7	2.8
G-7 average (excluding Canada)	10.8	9.2	7.5

[1] Combined Canadian federal and provincial corporate income tax plus residence country personal income tax.

[2] Individuals residing in each country taxed at the top marginal rate. Firms are assumed to be paying taxes.

Conclusion

This paper has provided an historical perspective on the tax-preferred form of corporate finance in Canada for large and small corporations and has presented an international comparison for large corporations for 2010. The tax burdens calculated in this paper suggest that:

- Canada is one of five countries in the comparison group that has a near-neutral tax treatment of financing sources for large corporations when financed by local taxable residents in 2010. In Canada, debt was the tax-preferred source of finance prior to 2010, but this advantage has been eliminated by substantial corporate income tax reductions, a lower effective tax rate on capital gains and improved integration, which all reduced the total tax burden on equity.
- When a large Canadian corporation is financed by a taxable resident of another G-7 country, personal income taxes in the investor's country of residence affect the cost of finance. For investors residing in all G-7 countries except the United Kingdom, debt financing is tax-favoured.
- For small Canadian corporations, which are assumed to be financed by taxable Canadian residents, equity has always been tax-favoured relative to debt as a result of the lower corporate income tax rate applied to small business income and for some firms the Lifetime Capital Gains Exemption.

Annex 1—Tax Rates Used in the Calculation of Total Tax Burdens

Table A1.1

Combined Federal and Provincial Tax Rates in Canada (1980 to 2013)

					Small Corporations	
	Corporate Income Tax	Personal Income Tax on Interest Income	Personal Income Tax on Capital Gains	Personal Income Tax on Dividends	Corporate Income Tax	Personal Income Tax on Dividends
			(%)			
1980	51.1	64.3	32.1	41.3	25.5	41.3
1981	51.2	64.7	32.4	41.5	23.0	41.5
1982	49.8	53.0	26.5	28.3	18.8	28.3
1983	48.5	53.2	26.6	28.4	18.8	28.4
1984	47.6	53.5	26.8	28.6	18.6	28.6
1985	49.4	54.9	27.5	29.3	22.2	29.3
1986	49.7	56.5	28.3	29.0	22.2	29.0
1987	48.6	54.1	27.1	37.6	22.0	37.6
1988	41.3	46.9	31.3	32.5	19.7	32.5
1989	41.3	47.5	31.7	32.8	20.2	32.8
1990	41.4	48.5	36.3	33.4	20.5	33.4
1991	41.8	49.4	37.0	34.1	20.8	34.1
1992	42.5	49.8	37.3	34.3	20.8	34.3
1993	42.5	51.4	38.6	35.5	20.8	35.5
1994	42.6	52.2	39.1	36.0	20.7	36.0
1995	42.9	52.2	39.1	36.0	21.0	36.0
1996	42.9	52.1	39.1	36.0	20.9	36.0
1997	42.9	51.5	38.7	35.6	20.9	35.6
1998	42.9	50.8	38.1	35.3	20.7	35.3
1999	42.9	49.7	37.3	34.3	20.7	34.3
2000	42.6	48.6	32.4	33.1	20.1	33.1
2001	40.6	46.0	23.0	31.3	19.6	31.3
2002	38.1	45.7	22.8	31.1	19.3	31.1
2003	36.0	45.6	22.8	31.1	19.0	31.1
2004	34.5	45.6	22.8	31.1	18.7	31.1
2005	34.4	45.6	22.8	31.1	18.6	31.1
2006	34.0	45.6	22.8	24.4	18.3	31.9
2007	34.1	45.5	22.8	24.0	18.2	32.0
2008	31.7	45.4	22.7	23.4	15.9	32.1
2009	31.3	45.4	22.7	23.0	15.9	32.4
2010	29.5	45.4	22.7	25.1	15.5	33.1
2011	27.8	45.3	22.7	26.6	15.5	33.0
2012	26.1	45.3	22.7	27.9	15.1	33.0
2013	25.7	45.3	22.7	27.9	15.1	33.0

Source: Department of Finance.

Table A1.2

Tax Rates on Income From Domestic Sources[1] (2010)

	Corporate Income Tax	Personal Income Tax on Interest Income	Personal Income Tax on Capital Gains	Personal Income Tax on Dividends
			(%)	
OECD Members				
Australia	30.0	46.5	23.3	23.6
Austria	25.0	25.0	25.0	25.0
Belgium	34.0	15.0	0.0	15.0
Canada	29.5	45.4	22.7	25.1
Chile	17.0	40.0	0.0	27.7
Czech Republic	19.0	15.0	0.0	15.0
Denmark	25.0	59.0	45.0	42.0
Finland	26.0	28.0	28.0	19.6
France	34.4	30.1	30.1	30.1
Germany	30.2	26.4	26.4	26.4
Greece	24.0	10.0	10.0	10.0
Hungary	19.0	20.0	20.0	25.0
Iceland	18.0	18.0	18.0	10.0
Ireland	12.5	47.0	31.0	47.0
Italy	31.4	12.5	12.5	12.5
Japan	39.5	20.0	10.0	10.0
Korea	24.2	33.0	0.0	31.1
Luxembourg	28.6	10.0	0.0	19.5
Mexico	30.0	30.0	0.0	0.0
Netherlands	25.5	30.0	0.0	30.0
New Zealand	30.0	38.0	0.0	11.4
Norway	28.0	28.0	28.0	28.0
Poland	19.0	19.0	19.0	19.0
Portugal	26.5	20.0	20.0	20.0
Slovak Republic	19.0	19.0	19.0	0.0
Spain	30.0	21.0	21.0	18.0
Sweden	26.3	30.0	30.0	30.0
Switzerland	21.2	35.0	0.0	20.0
Turkey	20.0	10.0	0.0	17.5
United Kingdom	28.0	50.0	28.0	36.1
United States	39.1	39.5	20.8	20.8
Non-OECD				
Brazil	34.0	27.5	15.0	27.5
China	25.0	20.0	20.0	20.0
Hong Kong	16.5	0.0	0.0	0.0

India	33.2	33.2	22.1	22.1
Russia	20.0	13.0	13.0	9.0
Singapore	17.0	20.0	0.0	0.0

[1] Income received from large corporations.

Sources: OECD Tax Database, International Bureau of Fiscal Documentation and PricewaterhouseCoopers' Worldwide Tax Summaries.

Table A1.3

Tax Rates on Income From Foreign Sources (2010)

	Personal Income Tax on Interest Income	Personal Income Tax on Capital Gains	Personal Income Tax on Dividends
G-7 Countries		(%)	
France	47.9	30.1	30.1
Germany	26.4	26.4	26.4
Italy	12.5	12.5	12.5
Japan	20.0	10.0	10.0
United Kingdom	50.0	28.0	42.5
United States	39.5	20.8	20.8

Sources: OECD Tax Database, International Bureau of Fiscal Documentation and PricewaterhouseCoopers' Worldwide Tax Summaries.

Annex 2—Effective Tax Rate on Capital Gains

In Canada, capital gains are taxed when they are realized rather than as they accrue. This deferral of taxation reduces the effective tax rate on capital gains and increases the after-tax return for the investor as the holding period is extended. Accrual-based taxation is less favourable to the investor because the capital base is eroded by taxation every year, while it continues to grow tax-free under the realization approach. For example, as illustrated in Table A2.1, a $1,000 investment that increases 5% in value per year generates an after-tax capital gain of $1,239.97 after 20 years when taxes are paid on disposition compared to $1,088.15 when taxes are imposed on accrued capital gains. Note that both the pre-tax capital gain and the total taxes paid are lower under accrual taxation, reflecting the erosion of the capital base by taxation.

Table A2.1

Taxation of Capital Gains on Accrual and on Realization ($1,000 Investment)[1]

Time Elapsed (Years)	Tax on Accrual				Tax on Realization		
	Pre-Tax Capital Gain	Tax Paid (Current Year)	Tax Paid (Cumulative)	After-Tax Capital Gain	Pre-Tax Capital Gain	Tax Paid on Disposition	After-Tax Capital Gain
				($)			
1	50.00	12.50	12.50	37.50	50.00	12.50	37.50
2	89.38	12.97	25.47	76.41	102.50	25.63	76.88
3	130.23	13.46	38.92	116.77	157.63	39.41	118.22
4	172.61	13.96	52.88	158.65	215.51	53.88	161.63
5	216.58	14.48	67.37	202.10	276.28	69.07	207.21
…	…	…	…	…	…	…	…
10	462.45	17.41	148.35	445.04	628.89	157.22	471.67
…	…	…	…	…	…	…	…
20	1,113.31	25.16	362.72	1,088.15	1,653.30	413.32	1,239.97

Note: Numbers may not add due to rounding.

[1] Assumes the investment increases in value by 5% a year, with capital gains taxed at 25%.

A more general approach to illustrate the benefits of the tax deferral is to calculate an effective tax rate on capital gains ($\hat{\tau}$) that, if levied every year (as under accrual taxation), would leave the investor with the same after-tax income as when capital gains are taxed on realization.

If an investor buys a $1 security that appreciates at rate γ and realizes a capital gain that is taxed at the end of N periods at rate τ_g, the investor will have the following after-tax income (I):

$$I = [(1 + \gamma)^N - 1](1 - \tau_g)$$

While if the tax is levied every year at rate $\hat{\tau}$, the investor's after-tax income at the end of N periods is determined by:

$$I = (1 + \gamma - \gamma\hat{\tau})^N - 1$$

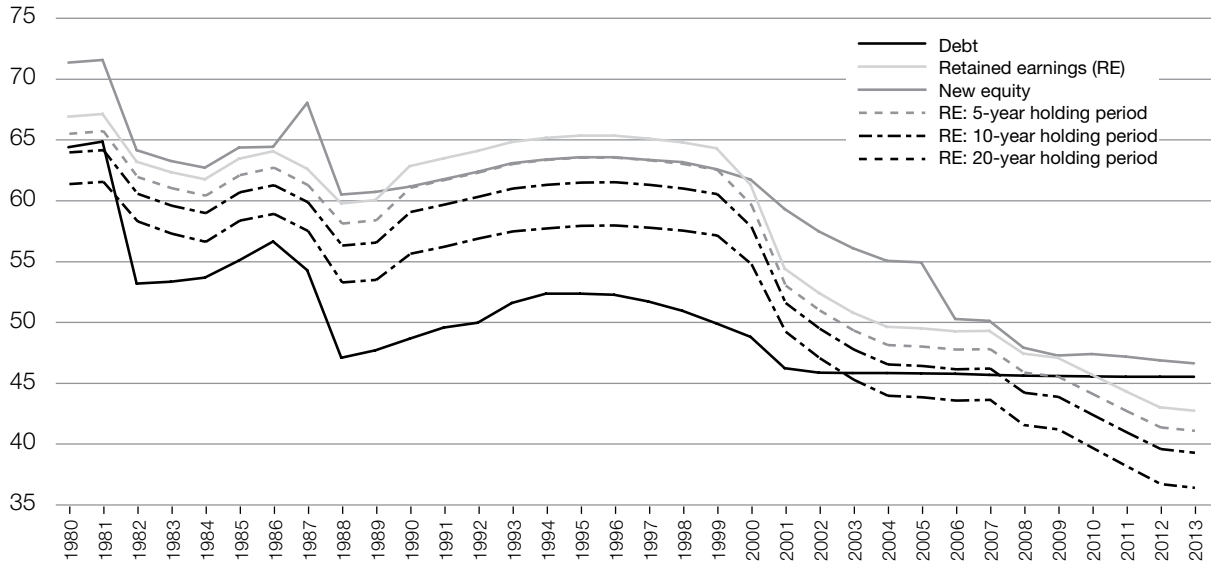
The effective tax rate on capital gains that leaves the investor with the same after-tax income can be obtained by setting the two equations equal and solving for $\hat{\tau}$:

$$\hat{\tau} = \frac{\{[(1 + \gamma)^N - 1](1 - \tau_g) + 1\}^{1/N} - \gamma - 1}{-\gamma}$$

The effective tax rate can be calculated by specifying the holding period N, the statutory tax rate on capital gains τ_g, and the growth rate γ in the value of the security, which is represented by the S&P/TSX Composite Index. The average annual growth between two peaks in the index (May 1987 and May 2008) was 6.8%.

Chart A2.1 depicts the total tax burden on an investment financed through retained earnings for each of the three holding period scenarios (5, 10 and 20 years). It is a reproduction of Chart 1 in which three new lines for retained earnings have been added that are lower as the holding period is extended, indicating that the effective capital gains tax rate has fallen. With a holding period of 10 or 20 years, retained earnings were by a small margin the tax-preferred type of finance in 1980 and 1981, before the 1982 decrease in the federal top personal income tax rate. Retained earnings would be the tax-preferred type of finance since 2003 under the 20-year holding period scenario, while they would be tax-favoured since 2008 under the 10-year scenario and starting in 2010 under the 5-year scenario.

Chart A2.1
Total Tax Burden[1]
Large Canadian Corporations Financed by Taxable Canadian Residents[2] **(1980–2013)**



[1] Combined federal and provincial personal and corporate income tax rates.
[2] Individuals residing in Canada taxed at the top marginal rate. Firms are assumed to be paying taxes.

References

Burman, Leonard E. and Peter D. Ricoy (1997). "Capital Gains and the People Who Realize Them." *National Tax Journal*, 50 (3): 427-451.

Keen, Michael, Alexander Klemm and Victoria Perry (2010). "Tax and the Crisis." *Fiscal Studies,* 31 (1): 43-79.

Klemm, Alexander (2006). "Allowances for Corporate Equity in Practice." IMF Working Paper 06/259, International Monetary Fund.

Organisation for Economic Co-Operation and Development (2008). "Tax and Economic Growth." Economics Department Working Paper No. 620.

Protopapadakis, Aris (1983). "Some Indirect Evidence on Effective Capital Gains Tax Rates." *Journal of Business*, 56 (2): 127-138.

The Response of Individuals to Changes in Marginal Income Tax Rates

Introduction

In recent decades, there has been growing interest in understanding how taxes affect taxpayer behaviour. Since governments collect most of their revenues directly from individuals, much of this attention has been directed towards understanding the different ways in which personal taxes influence individuals' decisions.

Many researchers have focused on how taxes influence specific outcomes (e.g., labour supply, savings, entrepreneurship, investment in education or skills). Others have studied the impact of taxes on a comprehensive measure of individual behaviour, individual taxable income (i.e., total or gross income minus deductions). This second approach captures the impact of marginal tax rates on both real economic behaviour and efforts to reduce taxes (e.g., claiming deductions or receiving non-taxable forms of compensation).

The impact of changes in tax rates on taxable income is not only of academic interest. Governments in the United States and the United Kingdom, among others, integrate behavioural responses into their assessment of personal income tax changes. For example, when the U.K. increased its top personal income tax rate to 50% from 40% (effective 2010), it took into account that those affected by the measure would reduce their taxable income in response.[1]

This study provides a summary of empirical analysis undertaken by the Department of Finance to examine the impact of recent reductions in marginal tax rates in Canada on individual taxable income. This analysis has several strengths which allow it to contribute to the understanding of the impact of taxes on individual behaviour.

- First, it analyzes recent Canadian experience (the late 1990s and early 2000s) and takes advantage of important differences in the timing and scope of tax reductions across provinces to produce robust estimates.
- Second, with a large, rich administrative dataset, it is possible to use two complementary methodologies, further ensuring robustness.
- Finally, the analysis builds on other studies and tries to address the main empirical challenges identified in this area.

The results of the analysis are broadly consistent with other Canadian studies, providing strong evidence that individuals, especially those with higher incomes, do respond to changes in tax rates. This evidence is relevant both for tax policy analysis and for estimates of the revenue impact of tax policy changes.

This study is organized as follows. First, it presents the concept used to measure tax-related behavioural responses (i.e., the elasticity of taxable income or ETI), a brief review of previous studies and challenges associated with analysis in this area. Second, it describes the estimation strategies in this empirical analysis. Third, it presents the results of this analysis. Technical annexes describe the literature, data and modelling techniques.

[1] See Brewer and Browne (2009) for background on this U.K. experience.

The Elasticity of Taxable Income: Definition, Previous Studies and Key Methodological Issues

Definition of ETI

The ETI measures the overall response of taxable income to changes in marginal tax rates. An elasticity describes the sensitivity of one economic variable to changes in another. In this context, the ETI refers to the percentage change in taxable income expected to result from a 1% change in the after-tax value of a marginal dollar of taxable income (with this latter measure referred to as the "net of tax rate").

The response measured by the ETI results from two broad types of decisions made by individuals. Individuals can alter their real economic behaviour and/or adjust their efforts to reduce taxable income.

Real economic behaviour. Tax-induced changes in real economic behaviour can occur when changes in marginal tax rates affect the value of consumption relative to leisure. Individuals can respond through a number of channels to make new choices with respect to how much they work and consume across time. In particular, they can respond by adjusting the hours that they work, their work effort, their choice between paid employment and self-employment/entrepreneurship, their level of savings and their investment in skills/human capital.[2]

Efforts to reduce taxable income. Taxpayers can also make efforts to reduce their taxable income with the aim of minimizing their tax payments, and changes in tax rates may influence this behaviour. Examples include the choice of form of remuneration, such as taxable earnings versus non-taxable fringe benefits, or the use of stock options and their associated deduction; and the use of other deductions, such as flow-through shares and the deduction of investment expenses.[3]

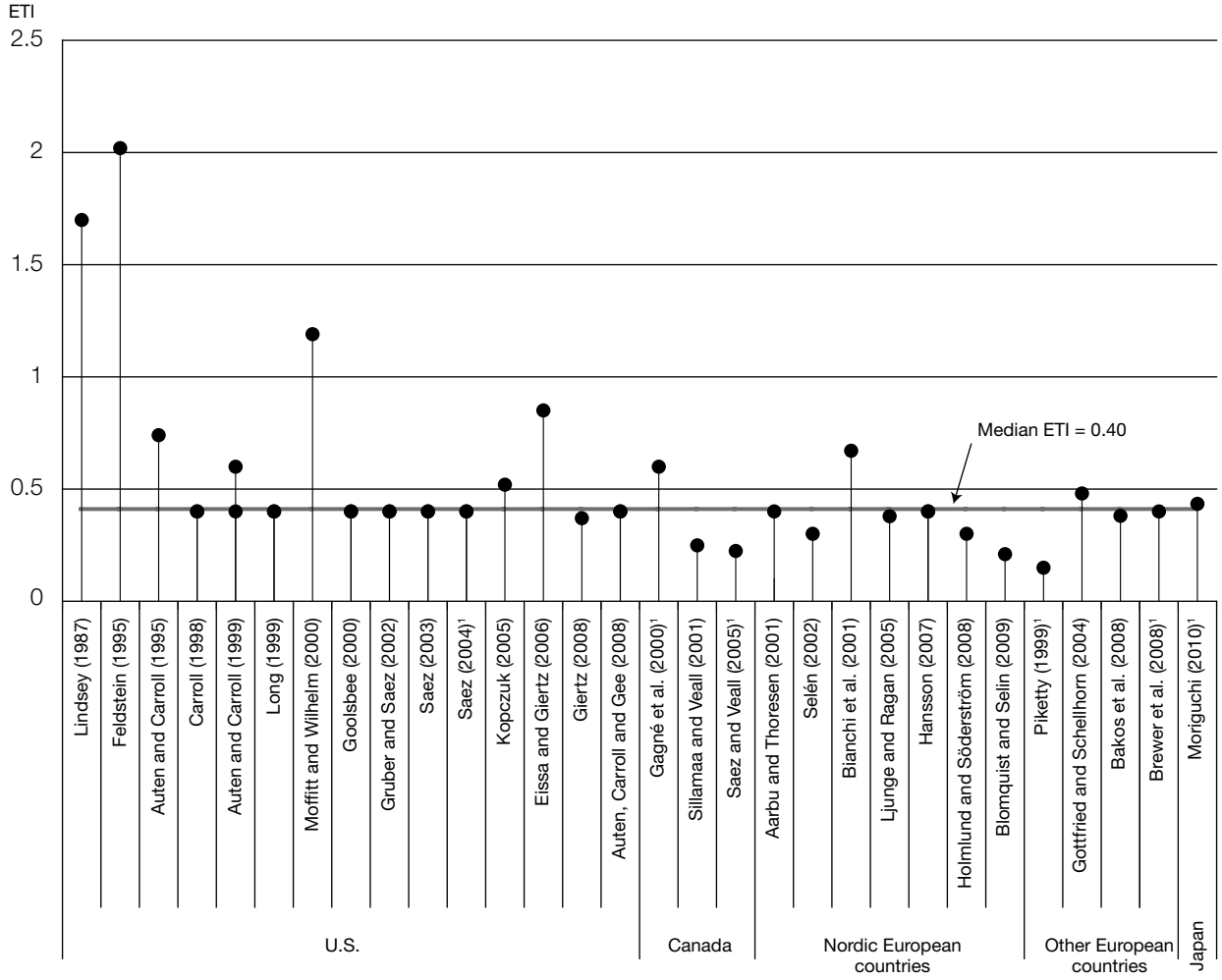
[2] In some instances, the ETI may not fully reflect the long-term impact of changes in real economic behaviour. For example, although lower marginal tax rates may encourage investment in human capital and generate higher earnings as a result, the short-term response may be a reduction in taxable income as individuals acquire new skills (e.g., leave the labour market to attend school). A similar analogy can also be made when an individual moves out of the paid workforce and faces adjustment costs associated with starting a business. These two examples would have the effect of underestimating the long-term impact of changes in real economic behaviour.

[3] Note, however, that efforts to reduce taxable income can also have real economic effects. For example, investments in flow-through shares can affect the allocation of capital across sectors of the economy. Thus, the two broad types of decisions affected by marginal tax rates should not be assumed to be completely independent of one another.

Previous Studies

As Chart 1 shows, many researchers have already analyzed the impact of tax rates on individual taxable income, mainly in the U.S. but also in Canada and other countries. Annex 1 reviews specific studies from this literature.

Chart 1
ETI Estimates From Selected Studies (Based on Preferred Estimate or Mid-Points)



[1]Aggregate-share approach.

The key results from this literature are as follows:

- The central ETI estimate in the international empirical literature is about 0.4. An ETI of 0.4 implies that a 10% increase/decrease in the after-tax value of the final dollar of taxable income will result in approximately a 4% increase/decrease in the taxable income reported by the taxpayer.
- The main Canadian studies have found an overall ETI of about 0.2, or half of the level from the broader international literature.
- The ETI is found to be significantly higher for taxpayers with very high incomes.

- Most of the literature has used individual-level data, but some studies (marked with a footnote in Chart 1) have used an aggregate-share approach (i.e., looking at the top 10% or 1% of the population as a group). Since each approach has strengths and weaknesses, the analysis prepared by the Department of Finance uses both approaches.

Key Methodological Issues

There are two important challenges that must be addressed in producing credible estimates of the ETI.[4] First, changes over time in income inequality have the potential to bias estimates of the ETI when changes in income inequality resulting from non-tax factors occur in the same time frame as a tax change. For example, if demand for highly skilled labour has increased significantly relative to demand for the labour of other workers, and related increases in the income of these workers coincides in time with tax rate changes, these income increases will be interpreted as resulting from changes in tax rates. A second key challenge results from transitory shifts from year to year in taxpayer income, rather than broad patterns across the income distribution. This occurs when an individual's income shifts significantly following a transitory shock (e.g., the receipt of performance pay or an unemployment spell) and eventually returns to its expected lifetime income profile. If not controlled for, the regression will interpret these non-tax-related shifts in taxable income in the year of the tax change as a tax-related effect, and can therefore lead to serious bias in the ETI estimates. Although early studies[5] in the U.S. literature did not include controls to overcome these two challenges, subsequent studies, including the analysis by the Department of Finance summarized in this study, have paid particular attention to the issue in their estimation strategies.[6]

Another factor to consider in the development of ETI estimates is the effect of income tax base shifting. In Canada, professionals and small business owners can typically choose to incorporate, and can thus be subject to both corporate income tax and personal income tax. Taxable income can shift between the personal income tax base and the corporate income tax base when the relative tax price of the two regimes changes (e.g., owner-operators are more likely to become incorporated when corporate tax rates become relatively more favourable and/or when incorporating makes it possible to defer tax). The U.S. studies examining tax base shifting[7] report a significant amount of shifting following changes in the relative tax price of the personal income tax and corporate income tax regimes. However, most studies in the ETI literature focus on the personal income tax base and do not extend the analysis to include the effects from/on the corporate tax base. This suggests a potential bias in the current ETI estimates if one is interested in the impact of a tax measure on overall government revenues. The analysis prepared by the Department of Finance attenuates this bias by adding controls for when individuals move from one tax regime to another and by conducting sensitivity analysis specifically for those unlikely to shift income between the corporate and personal bases (see Annex 2 for details).

A final key consideration associated with producing credible ETI estimates includes accounting for the effects of changes in external factors on taxable income. These can be exogenous economic shocks affecting labour demand or investment income, but can also be linked to changes to institutional factors, such as changes in efforts by authorities to enforce tax rules and encourage tax compliance. Not accounting for external factors would affect the reliability of the estimates when the effects of changes in external factors on taxable income coincide with tax changes. The analysis prepared by the

[4] Triest (1998), Slemrod (1998), Giertz (2004) and Saez, Slemrod and Giertz (forthcoming) provide interesting viewpoints on the empirical challenges surrounding the estimation of ETIs.

[5] Lindsey (1987) and Feldstein (1995) (the very high ETI values at the left of Chart 1).

[6] Annex 2 provides greater detail as to how the empirical analysis summarized in this study addresses these issues.

[7] See Gordon and MacKie-Mason (1994), MacKie-Mason and Gordon (1997) and Gordon and Slemrod (2000).

Department of Finance addresses this issue in two ways. First, it uses a comprehensive list of control variables (see Annex 2 for details). Second, it relies on interprovincial variation in tax rate changes to identify the ETI. Since the Canada Revenue Agency administers federal taxes for all Canadians (and provincial taxes for those living outside Quebec), enforcement is unlikely to vary significantly across provinces.

The Response of Individuals to Changes in Canadian Marginal Tax Rates in the Late 1990s and Early 2000s

The empirical component of this study examines how individuals responded to tax policy changes implemented in the late 1990s and early 2000s, when personal income tax rates were reduced substantially at both the federal and provincial levels. The observed differences in the timing and the scope of the provincial tax cuts provide the source of variation permitting the estimation of a taxpayer response.

Descriptive Analysis

Focusing on the four largest provinces, Chart 2 shows that there were two periods in the late 1990s and early 2000s in which there was significant variation in changes in marginal tax rates for taxpayers in the top income decile.[8]

First, there was a notable drop in effective marginal tax rates[9] (EMTRs) in Ontario in the second half of the 1990s, while EMTRs in Quebec, Alberta and British Columbia remained relatively unchanged. During this time, the growth in taxable income (excluding capital gains) in Ontario outpaced that of Quebec and British Columbia, with only Alberta incomes matching the growth.

The second variation of interest is the sharp drop in EMTRs across Canada in 2001 and 2002. Although changes to federal tax rates and brackets reduced EMTRs in all provinces, significant reductions in provincial tax rates in British Columbia and Alberta in the same two years offer a significant source of interprovincial variation in EMTRs for possible identification of a taxpayer response. Chart 2 shows that following the tax cuts, taxable income growth in British Columbia and Alberta surpassed that in each of Ontario and Quebec.[10]

[8] The empirical analysis presented in the following section covers all 10 provinces; Table A2.1 in Annex 2 provides top marginal federal-provincial tax rates for all provinces during the survey period, as well as their year-to-year changes.

[9] Effective marginal tax rates include federal and provincial income tax parameters, as well as parameters for family benefits and payroll taxes. A detailed description of the calculation is provided in Annex 2.

[10] Chart 2 presents EMTRs and taxable income shares for the top 10% of the taxable income distributions in the four largest provinces for the period 1995–2006. Both EMTRs and taxable income shares are normalized, meaning that their values in 1995 are set equal to one. This normalization is done to facilitate the interpretation of the trends in each of these two variables.

Econometric Analysis

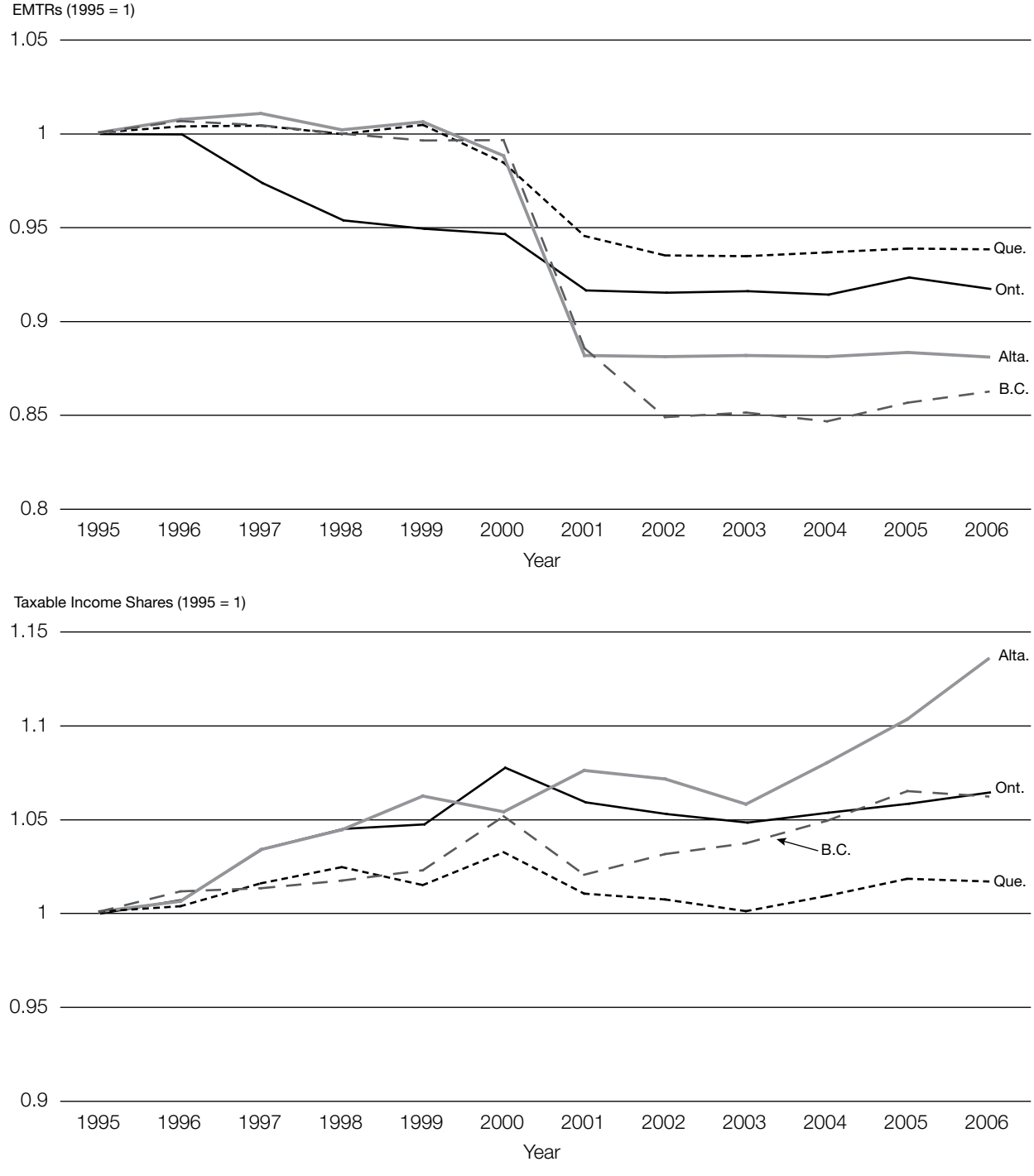
For the econometric analysis, two estimation strategies are employed in this study to estimate the tax-related behavioural response in Canada. This is made possible by the availability of a comprehensive administrative panel dataset of individual tax records spanning the period from 1994 through 2006.

- The first estimation approach uses the individual-level data. It applies a model similar to Gruber and Saez (2002)[11] to the full panel of data to estimate the ETI from variations in EMTRs both across provinces and over time.
- The second approach uses the same panel data, but in aggregate time-series form, to analyze the impact of the tax changes. This second methodology applies the Saez (2004) aggregate income shares model described in Annex 1, but extends it to exploit the availability of provincial variation in the data.

[11] See Annex 1 for details on Gruber and Saez (2002).

Chart 2

Trends in EMTRs and Taxable Income (Excluding Capital Gains) Shares, Top 10% of the Taxable Income Distribution: Quebec, Ontario, Alberta and British Columbia (1995–2006)



Applying these two models to the same data and tax reforms offers an opportunity to test both the robustness of each model and the efficiency of controls for exogenous events influencing taxpayer incomes. The two estimation strategies and issues of variable construction are described in Annex 2.

Results

Because of the possibility that the ETI varies across income groups, separate regression analyses were conducted for selected income groups. Although the estimation was not limited only to these income groups, there are four income groups for which results under the two estimation strategies are comparable. They are the top 10% (real taxable income of more than $60,000), the top 5% (real taxable income of more than $80,000), the top 2% (real taxable income of more than $110,000) and the top 1% (real taxable income of more than $150,000).[12] The top 10% of tax filers accounted for about 60% of personal income taxes paid (in 2006) while the top 1% accounted for almost 25%.

Estimation results from the two methodologies are consistent for each income group (Table 1). Using a sample incorporating individuals with real taxable income of about $60,000 per year or more, the estimated elasticity is approximately 0.2. This result implies that a 10% increase/decrease in the after-tax value of the final dollar of taxable income will result in approximately a 2% increase/decrease in the taxable income reported by the taxpayer.

Table 1
Estimates of the Elasticity of Taxable Income

		Elasticity of Taxable Income	
	Income Range (2006 Dollars)	Panel Data	Aggregate Data
Top 10%	$60,000 and over	0.19	0.19
Top 5%	$80,000 and over	0.32	0.30
Top 2%	$110,000 and over	0.51	0.46
Top 1%	$150,000 and over	0.72	0.62

All estimates are significant at the 1% level.

The elasticity of 0.2 is the average degree of responsiveness for a relatively broad sample of taxpayers. This does not mean that the elasticity is 0.2 for all individuals with taxable income in the top 10% of the income distribution. In fact, estimates of the ETI increase substantially further up the taxable income distribution. For example, the responses by individuals in the top 5% of the taxable income distribution (with an elasticity of about 0.3) and the top 1% of the distribution (with an elasticity of 0.62 to 0.72, depending on the estimation strategy used) are substantially greater than the base estimate for the top 10%. These upper-income ETI estimates are consistent with those in the existing literature.

As discussed above, the ETI is a composite measure which reflects adjustments in real economic behaviour and changes in efforts to reduce taxable income. While there is no perfect way to decompose this estimate into the two broad types of individual responses, it is possible to explore the issue by focusing the analysis on specific subgroups that might be expected to differ in the opportunities available to them to adjust their taxable income.

[12] All reported real taxable income levels are in 2006 dollars. Taxable income refers to taxable income less capital gains in all of the estimation results.

Sensitivity analysis was undertaken, for example, with respect to the primary source of income of taxpayers. It might be expected that those with business or investment income would have greater opportunities to adjust their income than other individuals (e.g., salaried individuals without access to performance pay, stock options, etc.). When business owners and taxpayers who derive the largest share of income from investments, including those with stock options, are removed from the sample, the ETI for the broad income group drops to 0.12 from about 0.2. This result is consistent with the fact that business owners and investors generally have more flexibility to adjust their real economic activities and more opportunities to shelter income from personal income taxes than do most taxpayers.

It should be noted, however, that the estimated response for individuals in the top 1% remains significant even when business owners, investors and those with stock options are removed from the sample. The ETI falls to 0.68 for this restricted sample, using the individual-level panel approach, compared to the 0.72 estimated with the original sample. Further investigation reveals that the primary source of the response for these individuals may be from changes in employment income. The response of these individuals measured by the elasticity of gross employment income relative to the net of tax rate remains strong at about 0.65. While some of this may reflect a shift from non-taxable forms of compensation (e.g., fringe benefits) to taxable compensation, the magnitude of the response suggests that increases in the quantity and quality of labour supplied are playing an important role.

Conclusion

Understanding how changes in tax rates influence the behaviour of taxpayers in both generating and reporting taxable income is important for the evaluation of tax policy. This study has summarized an analysis of how individuals responded to reductions in federal and provincial tax rates in the late 1990s and early 2000s. The ETI for the top 10% of Canadian tax filers is estimated by this study to be about 0.2. This response is in line with estimates in other Canadian studies and is lower than the consensus elasticity of 0.4 in the international literature for a comparable, broad taxpayer group.

Estimates of the behavioural response in the Canadian data, however, increase substantially as the analysis is restricted to higher-income groups. This pattern is consistent with the pattern of estimates for high-income earners in the international literature. The estimated ETI for the top 5% of the taxable income distribution in this study is approximately 0.3; for the top 1% the estimated ETI ranges between approximately 0.6 and 0.7.

The results of the analysis are broadly consistent with other studies, providing strong evidence that Canadians, especially those with higher incomes, do respond to changes in tax rates. This evidence is relevant both for tax policy analysis and for estimates of the revenue impact of tax policy changes.

Annex 1: Literature Review

Chart 1 in the body of the study presents the ETI estimates deriving from major groupings within the ETI literature. The variability in the estimates on view in the chart is attributable to a wide range of elements including (i) modelling assumptions (e.g., the absence of adequate controls for transitory income shocks in early studies such as Lindsey (1987) and Feldstein (1995)), (ii) country-specific factors such as access to tax deductions and enforcement, (iii) the nature of the tax reform and which group of taxpayers were affected, and (iv) the class of taxpayers examined by a study (e.g., studies of chief executive officers only (Eissa and Giertz (2006) produce much higher estimates than those focusing on a broader group of taxpayers).

It is also important to note that the convention in these studies is to remove capital gains from income given their typically volatile realization and their different tax treatment compared to other types of income. Several studies have, however, specifically examined the relationship between capital gains realization and taxes. Auerbach (1988) and Saez, Slemrod and Giertz (forthcoming) provide a detailed review of this literature.

U.S. Studies

As noted in Chart 1, the U.S. literature has been the most productive since the inception of this line of inquiry, with researchers gradually refining the estimation methodologies employed and the associated estimates. Lindsey (1987) was the first to measure the responsiveness of taxpayers, following the broad-based tax cuts introduced by the Economic Recovery Tax Act of 1981. Using an Internal Revenue Service tax return dataset (1980–1984), he found evidence of a very strong response following the reform, with the ETI varying from 1.6 to 1.8. The methodology that he employed has some serious shortcomings, however, that were relatively common in empirical studies of the time. In particular, the estimation framework treats the reform as a natural experiment, without controlling for other exogenous shocks and income mobility.

Feldstein (1995) and Auten and Carroll (1995) responded by studying the 1986 Tax Reform Act, which significantly reduced marginal tax rates for high-income individuals in the U.S. (from 50% to 28%) and included base-broadening changes. Their approaches advanced the literature by adopting a more robust methodology to control for non-tax factors and by making use of panel data to observe taxpayers across time. Feldstein (1995) estimates the average ETI to be between 1.04 and 1.48 and the ETI for high-income filers to be 3.0, but recognizes that the small number of high-income taxpayers in his sample may not accurately reflect the population of high-income taxpayers and therefore may limit the reliability of his estimates. At the same time, his estimates are consistent with those for high-income earners in Auten and Carroll (1995), who use a similar approach but more data and a more sophisticated model for estimation. In addition to replicating Feldstein's estimates, they examine the robustness of the estimates to alternate modelling specifications. Their preferred specification generates an ETI of 0.74, but they note a sensitivity of their estimates to model selection, as well as likely sample selection issues. The estimates in both of these studies were further compromised by a lack of sufficient controls to handle the aforementioned problem of transitory income shocks.

Auten and Carroll (1999) revisited the impact of the 1986 Tax Reform Act and paid particular attention to modelling individual characteristics and transitory income shocks, further improving upon their earlier work by using a more representative sample. These improvements lowered the ETI estimate significantly—reducing it from 1.1 using an approach similar to Feldstein (1995) to 0.6 in their preferred specification. Carroll (1998) also offers evidence of a lower ETI in his study of the effects of the tax increases of the 1990 and 1993 Omnibus Budget Reconciliation Acts on taxable income. The methodology used is similar to that applied by Auten and Carroll (1999), but makes use

of panel data extending from 1989 through 1995 instead of only a short panel straddling the year of the reform. The preferred estimate deriving from this study is 0.4.

Gruber and Saez (2002) also present an estimate of 0.4 by relying on an even larger panel dataset (1979–1990) to study the series of reforms enacted in the 1980s. Their model specification resembles that in the preceding literature except that it allows for additional controls to capture the effects of transitory income shocks. A recent study by Auten, Carroll and Gee (2008) focusing on the 2001 and 2003 tax rate reductions introduced by the Bush administration also estimated an ETI of 0.4. The authors employ a methodology similar to that used by Auten and Carroll (1999).

Saez (2004) introduces an aggregate income share analysis (1960–2000), as an alternative to a panel data model, to estimate the response of the share of income of taxpayers at the high end of the income distribution (the top 1%) to changes in tax rates. The share of income is regressed against the change in the marginal tax rates and a series of time trends. An aggregated approach has the advantage of avoiding estimation problems associated with transitory shocks to individual income, but it loses the advantages associated with some of the socio-demographic detail in individual-level data. Saez's preferred aggregate shares model estimates the ETI for his high-income sample to be approximately 0.6-0.7. Brewer, Saez and Shephard (2008) apply the methodology to the U.K. and find an ETI for high-income earners of between 0.46 and 0.73 for the years from 1978 through 2003.

Canadian Studies

Sillamaa and Veall (2001) is the only published Canadian study examining the responsiveness of Canadian taxpayers to the 1987–88 reform using panel data. The 1987–88 reform affected marginal tax rates across most of the income spectrum by reducing the number of brackets from 11 to 4 and by significantly broadening the taxable income base (as a result of the elimination or conversion of several deduction items to non-refundable credits). The authors follow the Auten and Carroll (1999) methodology and use Statistics Canada's Longitudinal Administrative Databank, a panel dataset tracking 20% of all tax filers. The analysis compares the 1986 and 1989 taxable incomes of tax filers. The ETI estimate resulting from this study, at 0.25 for working-age individuals, is lower than the broad estimates in the U.S. studies previously cited.[13]

Saez and Veall (2005) apply the aggregate share methodology for estimating the ETI proposed by Saez (2004) to Canadian data for the period from 1920 to 2000. The broader goal of their study is to analyze a surge in the income shares of top income groups in Canada in recent decades, while considering hypotheses as to why the surge in incomes has been almost as large in Canada as in the United States despite a more modest drop in effective marginal tax rates in Canada. Controlling for U.S. income growth, their preferred estimate for the ETI associated with the top 1% of Canadian earners is 0.17 using data from 1972 to 2000.

Other Countries

More than a dozen additional studies were considered in preparing this review, including seven examining taxpayer responses to major tax reforms in Scandinavian countries and the remaining studies examining taxpayer behaviour in France, Hungary, Germany, Japan and the U.K. These studies generally show a behavioural response of around 0.4, with the lower estimates attributed to the more egalitarian European countries (i.e. France and the Scandinavian countries).

[13] This estimate is, however, highly sensitive to assumptions about the variables included in the empirical model and the income groups included in the sample.

Annex 2: Description of Estimation Methodology

This study uses a micro-level taxpayer database made available by the Canada Revenue Agency. The longitudinal panel was created using a representative sample of the universe data that is equivalent to 10% of the universe database. The panel data span from 1994 to 2006 and contain both tax and socioeconomic information pertaining to taxpayers (comprising 20 million observations over 13 years).

The EMTRs are calculated for individuals in the sample using the Department of Finance's T1 microsimulation model. These rates include federal and provincial income tax parameters, as well as parameters for family benefits (such as the Canada Child Tax Benefit and the National Child Benefit supplement) and for employee contributions to Employment Insurance (EI) and the Canada/Quebec Pension Plan (CPP/QPP). Allowable spousal deduction/credit transfers are also accounted for in the EMTRs. Employers' contributions to EI and the CPP/QPP as well as provincial payroll taxes are, however, not included. Although a case could be made to include these premiums in our analysis, as they may be shifted by employers to low- to average-skilled employees through wage reductions, data limitations prevent us from including them at this time.

Two adjustments were made to the standard definition of taxable income. First, the definition of taxable income used in this study follows the convention in the international literature by excluding capital gains from income. Realized capital gains are subject to special tax treatment and their volatility amplifies the empirical challenges associated with transitory income shifts. The second adjustment relates to the definition of taxable income. It is standard practice to adopt a constant definition of taxable income across years to estimate the ETI as, in the absence of the adjustment, the effects of legislative changes to deductions or exemptions on taxable income would contaminate the estimates of responses to changes in marginal tax rates. The adjustment applied in this study consists of using the 1996 definition of taxable income, with the main items adjusted being Registered Retirement Savings Plan limits, child care deduction limits, the dividend gross-up rate and related credit levels, the deduction for workers in Quebec, and the inclusion percentage associated with the deduction for stock options.

Estimation Strategy One: Panel, Micro-Data Model

The first estimation approach applied in this study uses panel data and the benchmark model in the literature (similar to the Gruber and Saez (2002) model described in the literature review) to estimate the ETI from variation in EMTRs across provinces and over time. It is defined as follows:

$$\log \frac{TI_{i,t}}{TI_{i,t-1}} = \alpha + \varepsilon \log\left(\frac{1-\tau_{i,t}}{1-\tau_{i,t-1}}\right) + \sum_{n=1}^{N} \lambda^n R_{i,t}^n + \sum_{m=1}^{M} \beta^m Z_{i,t}^m + u_{i,t} \qquad (1)$$

Subscripts *i* and *t* represent the individual and the period in which the new tax parameters applied. TI reprents taxable income, τ is the EMTR, *R* encompasses a number of controls for transitory income shifts in taxable income, and *Z* represents a set of other determinants of the change in taxable income. The constant is denoted by α and $u_{i,t}$ is the error term. Regressions are weighted by taxable income to ensure proper representation of individuals in the overall tax base.

Two types of controls for transitory income shifts have been retained. The first asserts a non-linear relationship between the change in taxable income and the log of lagged income. It is meant to capture the general pattern of transitory income shifts in the data. For instance, individuals with abnormally high income are more likely to revert back to their life-cycle income path in the following

year, and conversely, those with very low income have a greater likelihood of moving up the income distribution.[14] The non-linearity is modelled by a 10-piece spline function, with knots placed at the decile thresholds of the log of lagged income. The 10-piece spline function has become a relatively standard control for transitory income shifts in the ETI literature.[15]

Modelling the general relationship between the change in income and prior-year income using a 10-piece spline may not, however, capture very large shifts in income in the data. Such atypical changes in income will contaminate estimates of tax-related behavioural response if the timing of these shifts in income coincides with a tax change. The associated bias would also most likely be amplified by the fact that some of these individuals at the top of the income distribution have large enough weights in the sample to significantly influence the overall estimates. To avoid the problem, the model also includes dummy variables to identify substantial transitory deviations in income from more predictable paths. We define these deviations as the ratio of the individual's income in year *t* to the individual's median real income, calculated over the years in which the individual is in the sample (hereafter defined as TI_t/M). Six groups are earmarked as experiencing large deviations in income according to this measure. They represent fractiles of the top and bottom 5% of the distribution of TI_t/M. The top 5% (less the top 1%), 1% (less the top 0.5%), and the top 0.5% are groups that include individuals with TI_t/M greater than 1.5, 2.2 and 3.5 respectively, and the lowest 5% (less the bottom 1%), 1% (less the bottom 0.5%), and the bottom 0.5% include individuals with TI_t/M less than 0.72, 0.50 and 0.45 respectively. In other words, as an example, a dummy variable for the top 5% (less the top 1%) is used to identify individuals with income in year *t* that is greater than 1.5 times their median income and less than 2.2 times their median income.

The character *Z* in the model represents a number of other determinants of the change in taxable income. These include gender, age, the presence of children under 18 in the home, marital status, filing method, means of producing income (defined as the major source of income), and year-specific provincial effects.

Contrary to the usual approach to measuring the effect of marital status, in which a dichotomous variable indicates whether an individual has a spouse, a number of dummy variables identifying both a change in marital status and the base state (whether or not married) are included in the model. The rationale for this addition is that a change in marital status may significantly alter taxable income for some individuals. A newly separated or widowed individual, for example, might be likely to increase his or her hours of work or to join the labour force if he or she was previously a homemaker. A newly separated individual could also adjust his or her work decisions to help finance spousal or child support payments, although at the same time such support payments could reduce taxable income (as they may be deductible). To capture some of these effects, included in the model are variables identifying individuals living with a spouse for more than a year, individuals who were married or who began living in a common-law situation during the last year, and new singles (separated, divorced or widowed).

Dummy variables representing an individual's means of generating income identify pensioners, investors, and unincorporated and incorporated business owners. The first three types are identified by the income category providing more of their income than any other type. Incorporated business owners are identified using data on EI contributions. That is, business owners with more than 40% of the interest in a company do not pay EI premiums on their remuneration. Three dummies are

[14] A study of income mobility in the data was completed in the early stages of the current study, but the results are not published here.

[15] The estimates in this study were not sensitive to the inclusion of higher order splines in which additional knots were defined at the very top of the income distribution (e.g., the top 5%, 1%, 0.1%, etc.).

constructed for incorporated business owners: those who have been incorporated for more than two years; owners of newly incorporated businesses; and owners moving out of incorporation for any reason (selling of the business, bankruptcy, choosing unincorporated business activities, etc.). The dummy variables identifying primary means of generating income are mutually exclusive.

Year-specific provincial effects were also included in the model if a province's aggregate taxable income deviated significantly from the national trend. These province-year dummies signal taxable income greater than the average national growth rate plus or minus twice the average absolute deviation of the provincial growth rates. A dummy was also added for the year 2000 to capture the sharp increase in taxable income as a result of the high-tech bubble.

In a progressive tax system, a positive income shock will push an individual's income into a higher tax bracket, resulting in a positive correlation between the EMTR (τ) and taxable income (*TI*). This endogeneity of the tax price is dealt with using an instrumental variable technique (two-stage least squares), in which the instrument is constructed by calculating a synthetic EMTR in year *t*. This is done by growing taxable income in year *t-1* by the overall average growth rate of taxable income from *t-1* to *t*, and then computing the EMTR the individual would have faced on that imputed income. The instrument then becomes the difference (in logs) of the synthetic tax price in year *t* and the actual tax price in year *t-1*.

Estimation Strategy Two: Pooled Cross-Section, Time-Series Aggregate Share Model

The second estimation strategy employed uses an aggregate income share model that exploits the same variation in EMTRs—both longitudinal and across provincial jurisdictions—to estimate a tax-related behavioural response.

The response for each specific income group is estimated using the following equation:

$$log\ s_{p,t} = \omega + \varepsilon\ log\ (1-\tau_{p,t}) + \sum_{x=1}^{X} \lambda^x v^x_t + \sum_{r=1}^{R} \delta^r_p Z^r_{p,t} + u_{p,t} \qquad (2)$$

The dependent variable, s, represents the total taxable income of a group as a share of total taxable income in year *t* and province *p*, and the explanatory variables include the (average, income-weighted) log of the net of tax rate (1-τ), as well as a number of national and province-specific macroeconomic controls (v and Z). Finally, ω is the constant and $u_{p,t}$ represents the error term.

The modelling approach adopted is similar to that employed by Slemrod (1996) and Saez (2004) and discussed in Saez, Slemrod and Giertz (forthcoming). Cross-sectional, time-series shares of taxable income and net of tax rates for segments of the income distribution comprising moderate, high and very high income earners are pooled to form the analysis dataset for each regression. The major divergence in the modelling approach of this study from the approaches taken in the aforementioned literature is that the richness of the available administrative data permits, as proposed by Saez, Slemrod and Giertz (forthcoming), the extension of the model to subnational jurisdictions. The sample sizes in the panel data being used are sufficient to increase the degrees of freedom in the analysis and to exploit provincial variation in the timing of combined federal and provincial tax changes. The addition of this further source of variation also permits the incorporation of controls for non-tax-related outcomes, such as the collapse of the high-tech bubble and increasing income inequality, without destroying identification.

The approach employed in this literature has been to run the regressions as the log of the income share of the fractile in question on its (average, income-weighted) net of tax rate. Such regressions control automatically for average income growth, with the addition of time trends controlling for a divergence in growth in income from the average for a specific fractile. This study therefore follows the convention of regressing the share of income accruing to a particular income fractile on the (average, income-weighted) net of tax rate for that group, with income shares and net of tax rates calculated by province for each fractile. The regressions are weighted by total fractile income, by province.

A number of variations were considered in making the final selection of independent variables in the regressions, with an effort made to provide for comparability across fractiles and to aim for parsimony in model selection. The initial analysis undertaken used federal-level taxable income thresholds to define fractile income shares by province. For the broader groups such as the top decile, or those with moderate or higher income, the dispersion of income growth across provinces in the later years in the series meant that a large proportion of the samples for provinces with slower earnings growth were being dropped. As a result, the preferred model using this data saw shares defined using provincial thresholds of taxable income per fractile. General time dummies to control for broad changes in income by fractile across time were also included in the final regression models.[16] An oil price dummy was added to these regressions for Alberta, specifically, to control for explosive growth in real income in that province in the latter years of the data.

A further note on time trends and dummies is required here. A range of model specifications, such as examples inclusive of aggregate quadratic and cubic time trends, were considered at various stages in the analysis. The analysis was also extended to include specifications with provincial linear, quadratic and cubic time trends. The results were broadly robust to a wide range of specifications, permitting the selection of the preferred model comprising aggregate time dummies, an Alberta oil price dummy, province dummy variables to control for province-specific effects, and a macroeconomic variable specific to each province (the province-specific employment rate). The inclusion of a real gross domestic product (GDP) variable in addition to the employment rate variable for each province was considered, but given the very high correlation between the two series there was no additional gain to including provincial real GDP in the final regressions.

[16] The use of a general trend per fractile is supported by the argument that within these groups of relatively skilled workers, especially at very high levels of earnings, similar broad economic trends will have been influential on earnings.

Table A2.1

Federal-Provincial Top Marginal Tax Rates (1996–2006)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	Top Marginal Rates (%)										
Federal only	31.3	31.3	31.3	30.5	30.5	29.0	29.0	29.0	29.0	29.0	29.0
Newfoundland and Labrador	53.3	53.3	53.3	53.7	51.3	48.6	48.6	48.6	48.6	48.6	48.6
Prince Edward Island	50.3	50.3	50.3	49.1	48.8	47.4	47.4	47.4	47.4	47.4	47.4
Nova Scotia	50.3	50.0	49.7	48.8	48.8	47.3	47.3	47.3	48.3	48.3	48.3
New Brunswick	51.4	51.1	50.4	49.2	48.8	46.8	46.8	46.8	46.8	46.8	46.8
Quebec[1]	52.9	52.9	52.5	51.7	50.7	48.7	48.2	48.2	48.2	48.2	48.2
Ontario[2]	52.9	51.6	50.3	47.9	47.9	46.4	46.4	46.4	46.4	46.4	46.4
Manitoba	50.4	50.4	50.1	48.5	48.1	46.4	46.4	46.4	46.4	46.4	46.4
Saskatchewan	51.9	51.9	51.6	50.4	49.7	45.0	44.5	44.0	44.0	44.0	44.0
Alberta	46.1	46.1	45.6	44.7	43.7	39.0	39.0	39.0	39.0	39.0	39.0
British Columbia	54.2	54.2	54.2	51.8	51.3	45.7	43.7	43.7	43.7	43.7	43.7
	Year-to-Year Percentage Change										
Federal only	0.0	0.0	0.0	-2.8	0.0	-4.8	0.0	0.0	0.0	0.0	0.0
Newfoundland and Labrador	3.9	0.0	0.0	0.6	-4.4	-5.2	0.0	0.0	0.0	0.0	0.0
Prince Edward Island	0.0	0.0	0.0	-2.4	-0.6	-2.9	0.0	0.0	0.0	0.0	0.0
Nova Scotia	0.0	-0.6	-0.6	-1.8	0.0	-3.0	0.0	0.0	1.9	0.0	0.0
New Brunswick	0.0	-0.6	-1.2	-2.3	-1.0	-4.0	0.0	0.0	0.0	0.0	0.0
Quebec	0.0	0.0	-0.8	-1.7	-1.9	-3.8	-1.0	0.0	0.0	0.0	0.0
Ontario	-0.5	-2.4	-2.6	-4.8	0.0	-3.0	0.0	0.0	0.0	0.0	0.0
Manitoba	0.0	0.0	-0.6	-3.2	-0.9	-3.5	0.0	0.0	0.0	0.0	0.0
Saskatchewan	0.0	0.0	-0.7	-2.4	-1.2	-9.5	-1.1	-1.1	0.0	0.0	0.0
Alberta	0.0	0.0	-1.0	-1.9	-2.3	-10.8	0.0	0.0	0.0	0.0	0.0
British Columbia	0.0	0.0	0.0	-4.3	-1.1	-10.8	-4.4	0.0	0.0	0.0	0.0

[1] The federal-provincial top marginal rate in Quebec includes the impact of the Quebec Abatement.

[2] The federal-provincial top marginal rate in Ontario excludes the impact of the Ontario Health Premium.

References

Aarbu, K. and T. Thoresen (2001). "Income Responses to Tax Changes: Evidence From the Norwegian Tax Reform." *National Tax Journal*, 54 (2): 319-334.

Auerbach, A. J. (1988). "Capital Gains Taxation in the United States: Realizations, Revenue, and Rhetoric." *Brookings Papers on Economic Activity*, 19 (2): 595-631.

Auten, G. and R. Carroll (1995). "Behavior of the Affluent and the 1986 Tax Reform Act." Proceedings of the 87th Annual Conference on Taxation of the National Tax Association, Columbus, Ohio: 70-76.

Auten, G. and R. Carroll (1999). "The Effect of Income Taxes on Household Income." *The Review of Economics and Statistics*, 81 (4): 681-693.

Auten, G., R. Carroll and G. Gee (2008). "The 2001 and 2003 Tax Rate Reductions: An Overview and Estimate of the Taxable Income Response." *National Tax Journal*, 61 (3): 345-364.

Bakos, P., P. Benczúr and D. Benedek (2008). "The Elasticity of Taxable Income: Estimates and Flat Tax Predictions Using the Hungarian Tax Changes in 2005." European University Institute Working Paper RSCAS 2008/32.

Bianchi, M., B. Gudmundsson and G. Zoega (2001). "Iceland's Natural Experiment in Supply-Side Economics." *American Economic Review*, 91 (December): 1564-1579.

Blomquist, S. and H. Selin (2009). "Hourly Wage Rate and Taxable Labor Income Responsiveness to Changes in Marginal Tax Rates." CESifo Working Paper No. 2644.

Brewer, M., E. Saez and A. Shephard (2008). "Means-Testing and Tax Rates on Earnings." Institute for Fiscal Studies Working Paper, Prepared for the Report of a Commission on Reforming the Tax System for the 21st Century, Chaired by Sir James Mirrlees.

Brewer, M. and J. Browne (2009). "Can More Revenue Be Raised by Increasing Income Tax Rates for the Very Rich?" Institute for Fiscal Studies Briefing Note BN84.

Carroll, R. (1998). "Tax Rates, Taxpayer Behavior, and the 1993 Tax Act." U.S. Department of the Treasury, Office of Tax Analysis Working Paper 79.

Eissa, N. and S. Giertz (2006). "Trends in High Incomes and Behavioral Responses to Taxation: Evidence From Executive Compensation and Statistics of Income Data." U.S. Congressional Budget Office Working Paper 2006-14.

Feldstein, M. (1995). "The Effect of Marginal Tax Rates on Taxable Income: A Panel Study of the 1986 Tax Reform Act." *Journal of Political Economy*, 103 (3): 551-572.

Gagné, R., J-F. Nadeau and F. Vaillancourt (2000). "Taxpayers' Response to Tax Rate Changes: A Canadian Panel Study." CIRANO Working Paper 2000s-59.

Giertz, S. (2004). "Recent Literature on Taxable-Income Elasticities." U.S. Congressional Budget Office Technical Paper 2004-16.

Giertz, S. (2008). "Taxable Income Responses to 1990s Tax Acts: Further Explorations." U.S. Congressional Budget Office Working Paper 2008-08.

Goolsbee, A. (2000). "What Happens When You Tax the Rich? Evidence From Executive Compensation." *Journal of Political Economy*, 108 (2): 352-378.

Gordon, R. and J. MacKie-Mason (1994). "Tax Distortions to the Choice of Organizational Form." *Journal of Public Economics*, 55 (2): 279-306.

Gordon, R. and J. Slemrod (2000). "Are 'Real' Responses to Taxes Simply Income Shifting Between Corporate and Personal Tax Bases?" J. Slemrod, ed., *Does Atlas Shrug? The Economic Consequences of Taxing the Rich,* Harvard University Press and the Russell Sage Foundation.

Gottfried, P. and H. Schellhorn (2004). "Empirical Evidence on the Effects of Marginal Tax Rates on Income—The German Case." IAW-Diskussionspapiere 15.

Gruber, J. and E. Saez (2002). "The Elasticity of Taxable Income: Evidence and Implications." *Journal of Public Economics*, 84: 1-32.

Hansson, A. (2007). "Taxpayers' Responsiveness to Tax Rate Changes and Implications for the Cost of Taxation in Sweden." *International Tax and Public Finance*, 14 (5): 563-582.

Holmlund, B. and M. Söderström (2008). "Estimating Dynamic Income Responses to Tax Reforms: Swedish Evidence." Institute for Labour Market Policy Evaluation Working Paper 2008:28.

Kopczuk, W. (2005). "Tax Bases, Tax Rates and the Elasticity of Reported Income." *Journal of Public Economics*, 89 (11-12): 2093-2119.

Lindsey, L. (1987). "Individual Taxpayer Response to Tax Cuts: 1982-1984, With Implications for the Revenue Maximizing Tax Rate." *Journal of Public Economics*, 33: 173-206.

Ljunge, M. and K. Ragan (2005). "Labor Supply and the Tax Reform of the Century." University of Chicago Working Paper.

Long, J. (1999). "The Impact of Marginal Tax Rates on Taxable Income: Evidence From State Income Tax Differentials." *Southern Economic Journal*, 65 (4): 855-869.

MacKie-Mason, J. and R. Gordon (1997). "How Much Do Taxes Discourage Incorporation?" *The Journal of Finance*, 52 (2): 477-505.

Meghir, C and D. Phillips (2008). "Labour Supply and Taxes." Institute for Fiscal Studies Working Paper W08/04.

Moffitt, R. and M. Wilhelm (2000). "Taxation and the Labor Supply Decisions of the Affluent." J. Slemrod, ed., *Does Atlas Shrug? The Economic Consequences of Taxing the Rich*, Harvard University Press and the Russell Sage Foundation.

Moriguchi, C. (2010). "Top Wage Incomes in Japan, 1951-2005." *Journal of the Japanese and International Economies*, 24:301-333.

Piketty, T. (1999). "Les hauts revenus face aux modifications des taux marginaux supérieurs de l'impôt sur le revenu en France, 1970-1996." *Économie & Prévision*, 138-139: 25-60.

Saez, E. (2003). "The Effect of Marginal Tax Rates on Income: A Panel Study of 'Bracket Creep.'" *Journal of Public Economics*, 87: 1231-1258.

Saez, E. (2004). "Reported Incomes and Marginal Tax Rates, 1960-2000: Evidence and Policy Implications." James Poterba, ed., *Tax Policy and the Economy*, 18: 117-174.

Saez, E. and M. Veall (2005). "The Evolution of High Incomes in Northern America: Lessons From Canadian Evidence." *The American Economic Review*, 95 (3): 831-849

Saez, E., J. Slemrod and S. Giertz (forthcoming). "The Elasticity of Taxable Income With Respect to Marginal Tax Rates: A Critical Review." *Journal of Economic Literature.*

Selén, J. (2002). "Taxable Income Responses to Tax Changes: A Panel Analysis of the 1990/91 Swedish Reform." FIEF Working Paper No. 177.

Sillamaa, M. A. and M. Veall (2001). "The Effect of Marginal Tax Rates on Taxable Income: A Panel Study of the 1988 Tax Flattening in Canada." *Journal of Public Economics*, 80 (3): 341-356.

Slemrod, J. (1996). "High-Income Families and the Tax Changes of the 1980s: The Anatomy of Behavioral Response." M. Feldstein and J. Poterba, cds., *Empirial Foundations of Houseold Taxation*, University of Chicago Press and the National Bureau of Economic Research.

Slemrod, J. (1998). "Methodological Issues in Measuring and Interpreting Taxable Income Elasticities." *National Tax Journal*, 51 (4): 773-788.

Triest, R. K. (1998). "Econometric Issues in Estimating the Behavioral Response to Taxation: A Nontechnical Introduction." *National Tax Journal*, 1 (4): 761-772.