Tax-Deferred Retirement Saving in Canada

Author

Doug Chandler, FSA, FCIA
Canadian Retirement Research Actuary
Society of Actuaries

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Canadian employers who sponsor retirement plans have mostly adopted arrangements that qualify for deferral of taxes. It is no longer clear that this is the best choice. Low interest rates and the emergence of Tax-Free Savings Accounts mean that there could be better alternatives for future generations of employees. This research report re-examines the effectiveness of tax deferral and other fundamental choices. Analysis is specific to unmarried persons working and retiring in Ontario, but similar conclusions could be reached in other jurisdictions and family situations.

- It is widely believed that individuals will be in a lower tax bracket during retirement than when they are working, but this is not necessarily true once clawbacks and the phase-out of tax credits are considered.
- Deferral of investment income tax is not nearly as important in a low interest rate environment, and this factor might be outweighed by higher tax and clawback rates
- Although payroll taxes are reduced when retirement savings contributions are made by employers rather than employees, this might not be the most important factor in a low interest rate environment.
- Conventional wisdom suggests that an individual with both registered and non-registered savings should allocate bonds to a tax-sheltered arrangement and stocks to a non-registered investment account. This is true even if low interest rates mean the after-tax rate on bonds is lower than the after-tax rate on equites, but only on a risk-adjusted basis.

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Faisal Siddiqi, FSA, FCIA
Chun-Ming (George) Ma, FSA, FCIA, PhD
Malcolm Hamilton, FSA, FCIA, MSc
Minaz Lalani, FSA, FCIA, CERA, FCA
Bruce Jones, FSA, FCIA, PhD
Michel St-Germain, FSA, FCIA, MS

Introduction and Background

The Canadian tax system offers employers who sponsor retirement savings arrangements a few major choices. The most popular arrangements can all be grouped into the broad category of tax-deferral arrangements (TDAs). Conventional wisdom tells us that a TDA is superior to other approaches to employer-sponsored retirement savings plans for three reasons:

1. Tax rates on tax-deferred income will be lower because retirement income will be lower than employment income.
2. Investment earnings will be greater if they are not taxed.
3. Individuals will be less tempted to squander their savings if they are earmarked for retirement and there are penalties for early withdrawal.

All this might still be true, but the case for a TDA is weaker than it used to be. Employers should not maintain a TDA simply because they have always done so. It is possible that employees would rather not see any part of their total compensation directed to TDA. All else being equal, they might prefer employment opportunities that allow them to invest in a Tax-Free Savings Account (TFSA), an Employee Profit Sharing Plan (EPSP), a non-registered account, or not at all.

Employees' preferences could be affected by declining interest rates, improving longevity, and the emergence of the TFSA. While these changes have little impact on the choices for baby boomers whose retirement savings are already in place, they will have more impact on future generations. Younger employees could prefer plans

Tax Status	Contributions	Investment Earnings	Distributions
Tax-Deferral Arrangement (TDA) • Registered Retirement Savings Plan (RRSP) • Registered Pension Plan (RPP) • Deferred Profit Sharing Plan (DPSP) • Pooled Retirement Pension Plan (PRPP) or Québec Voluntary Retirement Savings Plan (VRSP)	Tax-deductible for employer or employee	Tax is deferred until distribution	Taxable as ordinary income
Tax-Free Savings Plan (TFSA)	From after-tax income	No tax	No tax
After-Tax Saving • Employee Profit Sharing Plan (EPSP) • Personal Investment Account	From after-tax income	Taxed when earned[1], at special rates	No tax
Unfunded Supplementary Employee Retirement Savings Plan (SERP)	No deduction or tax on notional contributions	No tax on notional earnings	Tax deductible for employer and taxable for employee
Retirement Compensation Arrangement (RCA)	Tax deductible, but subject to 50% refundable tax	Subject to 50% refundable tax	Refundable tax returned; taxable for employee

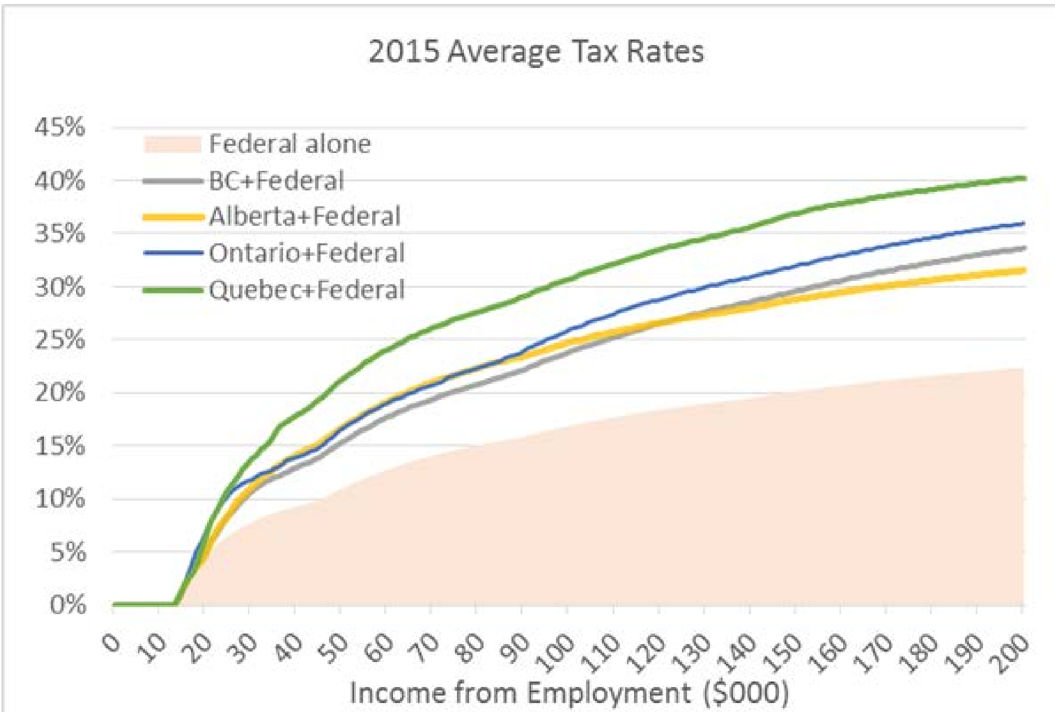
[1] Interest income is taxed at ordinary rates when it accrues, not when it is paid. Capital gains are taxed at 50% of ordinary rates when they are realized through a sale or change in ownership of the investment. Dividends from Canadian corporations are taxed when paid, with allowance for corporate income tax.

that are not locked-in, so that they will be able to convert their entire TDA balance into early retirement income and TFSA contributions prior to the commencement of Old Age Security (OAS) benefits.

To begin, here is a brief refresher on the Canadian personal income tax environment.

Average Tax Rates

Canada has a progressive income tax structure, with higher tax rates applicable to individuals with higher earnings. The graph below shows the combined federal and provincial average tax rates applicable to ordinary earnings in four major provinces.[2]



These average tax rates on ordinary employment income do not tell the whole story. Any particular taxpayer will have unique circumstances and a unique average tax rate. Income from employment, pensions, or investments has special treatment depending on the source:

- Dividends from after-tax earnings of Canadian corporations are grossed up by an allowance for the income tax paid by the corporation for the purpose of determining the individual's tax bracket, and then the resulting personal tax is reduced by a dividend tax credit to reflect this allowance.

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[2] The graph is based on the author's calculations and tax rates for 2015 posted by the Canada Revenue Agency. The average tax rate is the tax payable divided by the employment earnings. In particular, Canada or Québec Pension Plan contributions and Employment Insurance premiums are not included in taxes, but are included in tax credits. There are no deductions and no other tax credits, other than the basic personal exemption and the federal employment credit. The Ontario and Québec health taxes are included in the tax payable. The federal tax abatement for Québec taxpayers is deducted from the total of federal and Québec taxes.

- Capital gains on both Canadian and foreign investments are adjusted to 50% of the amount realized.
- Individuals may claim deductions for TDA contributions and for expenses incurred to earn income. Deductions directly reduce taxable income and affect the individuals' tax bracket.
- Canada Pension Plan or Québec Pension Plan (C/QPP) contributions and Employment Insurance (EI) premiums are collected through the income tax system.
- Individuals may claim various tax credits (including credits for dependents, age, pension income, C/QPP contributions, EI premiums, medical expenses, and charitable donations). Credits reduce the final tax paid, but do not affect taxable earnings or the individual's tax bracket.

Entirely aside from income taxes, governments offer a variety of income-tested benefits and rebates, and the clawback or phase-out of these benefits is, effectively, an additional tax on income.

Different provinces have different brackets, deductions, credits and rebates. Thus, while the chart provides a useful comparison of provincial tax rates, it would apply to a particular individual only if that individual's income consisted entirely of employment income and the individual had no dependents or other deductions.[3]

Effective Marginal Tax Rates

The correct basis for evaluating tax-deferral strategies is the "effective marginal tax rate" — the combined effect of taxes and income-tested government benefits on an additional dollar of taxable income. Effective marginal tax rates can be used to compare the after-tax cost of retirement saving to the after-tax benefit of additional tax-deferred retirement income.

Once all factors are taken into account, effective marginal tax rates on retirement income can be considerably higher than rates applicable to wages. To complicate matters, future tax rates are hard to predict with confidence. Tax and social benefit rates change, dependents come and go, and people move from province to province or even retire outside of Canada. Taxable retirement income and tax brackets can turn out to be significantly different from a financial plan because of investment returns, retirement age, salary growth, alimony, or other factors.

The chart below shows effective marginal tax rates applicable in Ontario.

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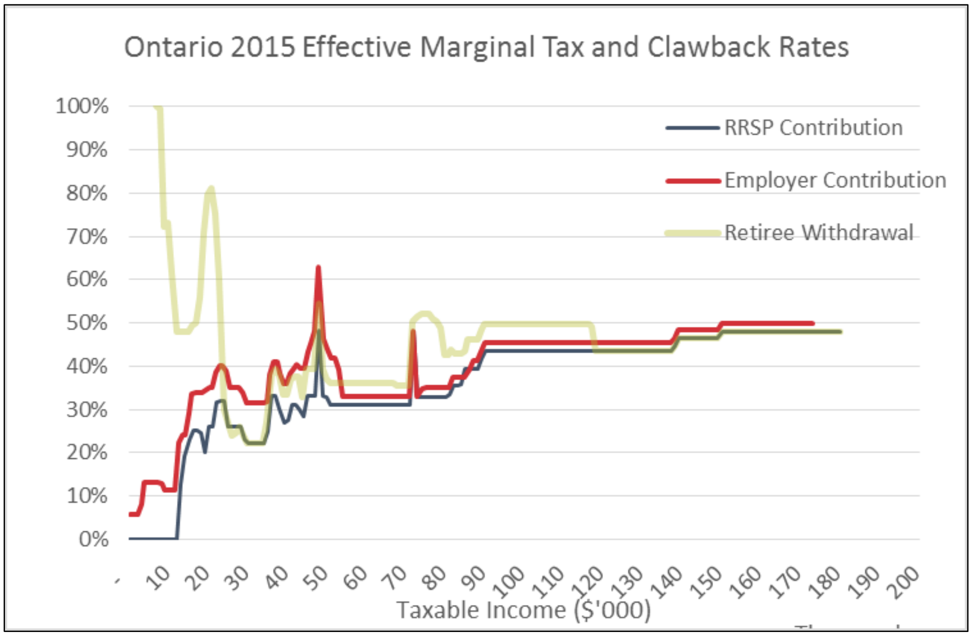
[3] Additional details on federal and provincial tax rates can be found on the Canada Revenue Agency website (http://www.cra-arc.gc.ca/). A summary of tax rates can be found at http://www.cra-arc.gc.ca/tx/ndvdls/fq/txrts-eng.html. Most accounting firms and many other firms providing financial and tax planning advice to employers and individuals also post summaries of individual tax rates and rules. See, for example, the Ernst & Young personal tax calculator at http://www.ey.com/CA/en/Services/Tax/Tax-Calculators-2015-Personal-Tax and Chapter 1 of the KPMG Tax Facts 2014–15 book at www.kpmg.ca/taxfacts.



- For a **retiree withdrawal** from a TDA, taxable income includes C/QPP income and OAS benefits (net of the clawback), as well as TDA benefits and any employment earnings. The Guaranteed Income Supplement (GIS) and other non-taxable government benefits are excluded, but the clawback of these benefits is included in the effective marginal tax rates. Lower effective marginal tax rates would apply to TDA withdrawals prior to commencement of OAS.
- An employee's **RRSP contribution** reduces income for tax purposes. C/QPP contributions[4] and EI premiums[5] are deductible for the employer and provide tax credits for the employee regardless of the type of employee contributions to a TDA so the employee's effective marginal tax saving from making RRSP contributions does not include any saving in C/QPP and EI contributions.
- An **employer contribution** to a locked-in TDA (an RPP, PRPP, VRSP, or a group RRSP that does not permit withdrawals prior to retirement) does not attract C/QPP contributions or EI premiums. The effective marginal tax saving from employer contributions does include C/QPP and EI contributions and also includes the Ontario Employer Health Tax (EHT)[6]. The marginal rate is the reduction in take-home pay that would occur if the

[4] Canada Pension Plan combined employer and employee contributions are 9.9% of contributory earnings in excess of the $3,500 Year's Basic Exemption and less than the 2015 Year's Maximum Pensionable Earnings of $53,600. The rate for Québec Pension Plan combined employer and employee contributions is 10.5% in 2015 and is scheduled to increase to 10.8% in 2017.

[5] Employment insurance premiums for 2015 are 1.88% of insurable earnings up to $49,500 for workers and 129.8% of this amount for employers who sponsor a Category 1 sick leave plan. Rates for Québec employees, including Québec Parental Insurance Plan premiums are slightly higher.

[6] Employer health taxes are 1.95% of remuneration for employers with total Ontario payroll over $400,000. Employer contributions to pension plans and deferred profit sharing plans are not included in taxable remuneration.

employer were to determine an incremental contribution to a TDA in a way that results in no change in the employer's total compensation cost.

An employer who wants to direct part of an employee's total compensation toward the employee's retirement saving can choose one of the following:

- A pre-tax payment directly to a locked-in TDA with no C/QPP or EI premiums;
- A pre-tax payment to a Group RRSP that is not locked in but is subject to C/QPP and EI premiums; or
- An after-tax payment to a TFSA or EPSP, with the gross pre-tax amount subject to C/QPP and EI premiums.

The factors included in the 2015 effective marginal tax rates shown above for retiree withdrawals from a TDA are the following:

- Federal and provincial income taxes on income in excess of the applicable non-refundable tax credits;
- OAS clawback (15% on earnings from $72,809 to $117,908[7], net of the reduction in taxable earnings that results from the clawback);
- GIS phase-out (50% on earnings in excess of OAS up to $22,365, plus 25% of earnings in excess of OAS over a range from $2,040 to $2,500)[8]
- Federal age amount tax credit phase out (15% of the credit, or 2.25% of earnings from $35,466 to $82,353);
- Goods and Services Tax (GST) additional credit (an addition to the GST credit of up to $143 for individuals with taxable earnings in excess of $8,333, effectively a negative 2% tax on earnings between $8,333 and $15,983);
- GST credit reduction (5% of earnings from $35,465 to $43,765);
- Ontario age amount tax credit phase-out (15% of the credit or 0.7575% of earnings from $35,849 to 67,949);
- Ontario Health Tax (6% of earnings from $20,000 to $25,000 and from $36,000 to $38,500 and 25% of earnings in each $600 earnings band starting at $48,000, $72,000, and $200,000);
- The Ontario Guaranteed Annual Income System (GAINS) clawback (50% of earnings up to $1,992);

[7] GIS and OAS amounts can be found on the Service Canada website at http://www.servicecanada.gc.ca/eng/services/pensions/oas/payments/index.shtml. Currently these benefits commence no earlier than age 65. The commencement age is scheduled to gradually increase to age 67 between 2023 and 2029. The government has indicated its intention to cancel this increase and to improve GIS benefits. Commencement of OAS may be deferred by up to five years, with an increase in the monthly rate. The marginal tax calculations reflect the amounts currently payable at the earliest commencement age.

[8] For a discussion of the interaction of Canada's OAS and GIS benefits with retirement savings and the disincentives for retirement saving as the system existed before the introduction of the TFSA, refer to D. Chisholm, *Negative Effects of the GIS Clawback and Possible Mitigating Alternatives*, Actuarial Research Clearing House 2008 Issue 1, https://www.soa.org/library/proceedings/arch/2008/arch-2008-iss1-chisholm.pdf.

- The Ontario sales tax rebate phase-out (4% of earnings from $22,057 to 29,232); and
- Ontario Trillium energy and property tax benefit phase-out (2% of earnings from $22,057 to an upper limit that depends on age and "occupancy cost", plus 3.33% of senior homeowners' earnings from $35,000 to $50,000)[9].

Different effective marginal taxes could apply as a result of pension splitting, foreign tax credits or other more obscure tax rules[10].

Retirement Saving: TFSA versus TDA

A TFSA offers the same tax-sheltered investment income as a TDA (with the minor exception of taxes withheld on U.S. investments, as discussed below). The principal difference is that income is taxed on the way into a TFSA, rather than on the way out. If the effective marginal tax rates applicable over the range of contributions to a TDA are lower than the effective marginal tax rates over the range of the extra income attributable to the income from the TDA, then the TDA will underperform a TFSA.

For example, an unmarried Ontario employee who earns $40,000 per year can expect government benefits commencing at age 67 that will replace 70% of pre-retirement take-home pay. This might be adequate, if the employee will use part of his or her take-home pay to purchase a home and the mortgage will be paid off prior to retirement. No additional saving would be warranted. Employer-imposed retirement saving would impair the employee's ability to become a homeowner. However, if the objective is an earlier retirement date or a 100% after-tax replacement ratio, several savings options are available for an employee who is entering the workforce today and their employer:

- The employee could contribute to a TFSA with no tax or government benefit consequences;
- The employee could contribute to an RRSP, with a 27% effective marginal tax saving applicable to contributions and a 43% effective marginal tax rate applicable to withdrawals;
- The employer could contribute to a locked-in TDA, with an offsetting reduction to pay to produce the same total payroll cost (after giving credit for reduced contributions to C/QPP, EI, and EHT), with an effective marginal tax saving on contributions of 38%; or
- The employee and employer could implement a combination of TDA, TFSA and non-registered saving.

Depending on the income level and the target replacement ratio, any one of these strategies could turn out to be the most effective:

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[9] Details concerning the Ontario Trillium Benefit can be found on the Ontario government website at http://www.fin.gov.on.ca/en/credit/otb/index.html. Calculations reflect an occupancy cost of $3,000.
[10] For example, alternative minimum tax, medical expense deduction, credits transferred from spouse.

- Employees with earnings less than the Year's Maximum Pensionable Earnings (YMPE) under the C/QPP can expect the best outcomes by relying entirely on the TFSA and GIS system. The penalty for using the TDA system is smaller with employer contributions than with employee contributions, but is still present – even after taking account of the reduction in C/QPP benefits resulting from reduced contributions to C/QPP.
- For middle-income employees (1 to 1.5 times the YMPE), the pure TFSA strategy can be used to preserve a portion of the GIS benefit, and so it can marginally outperform a TDA strategy, unless the employees have a mortgage or a spouse with lower income.
- For employees earning more than 1.5 times the YMPE, maximum TFSA contributions will likely not be sufficient[11]. The current 18% limit on defined contributions to a TDA might also be insufficient with low real interest rates and high management fees. Thus, a mixture of strategies or a lower retirement income target may be necessary.
- Even if TDA contributions are from earnings that exceed the C/QPP and EI contribution limits, employer contributions to a locked-in TDA will outperform employee contributions to a TDA because of provincial payroll taxes like the Ontario EHT.
- If a pure TDA strategy would push post-retirement income into the OAS clawback range, then a mixed strategy will be preferable.
- High-income employees will be forced to use a mixture of strategies, because of the limits on both TFSA and TDA contributions.

These conclusions are consistent with findings by Keith Horner[12]. He concluded that Canadians "would be better off saving solely in TFSAs" if they have earnings high enough to warrant any retirement saving and "2011 family earnings up to between $76,000 and $85,000, depending on family type."

Income Splitting and Other Tax Reduction Strategies

The calculations presented here are for a single individual. A married couple has different GIS limits and additional opportunities for lowering effective marginal tax rates. Pension income (including Registered Retirement Income Fund distributions after age 65) can be transferred to a spouse, potentially lowering the effective marginal tax rate applicable to that income.

Retirees can also minimize tax and maximize social benefits such as OAS through other strategies such as:

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[11] The TFSA limit was initially set at $5,000, with automatic increases in $500 increments in line with CPI. It was increased to $10,000 (non-indexed) in 2015, but will revert to the original formula in 2016. The limit for 2014 and 2016 is $5,500. Depending on the level of inflation, a 10,000 non-indexed limit might have been less generous than the $5,000 indexed limit over the lifetime of an individual entering the workforce today.
[12] Keith Horner, *A New Pension Plan for Canadians: Assessing the Options* IRPP Study 18 (Montreal: Institute for Research on Public Policy, 2011), http://irpp.org/research-studies/study-no18.

- Choice of the starting age for Canada Pension Plan retirement benefits;
- Choice of optional bridge benefits and survivor benefits from registered pension plans;
- Managing the timing of withdrawals from a TDA;
- Managing the timing of realization of capital gains on non-registered investments;
- Accelerating tax credits for donations through charitable foundations; and
- Permanent life insurance products.

One well-known strategy for an individual who would otherwise be subject to the OAS clawback every year is to bounce income up and down, so that OAS is preserved in some calendar years but not others. Converting a lifetime pension into a lump sum settlement can facilitate this strategy, subject to locking-in rules.

It is difficult for an individual or an employer to anticipate these strategies during the individual's working career. Nonetheless, it is important to understand that equal periodic taxable payments of retirement income are not always optimal, and that flexibility in the timing of recognition of income for tax purposes can be important.

Retirement Saving – Non-registered Investments versus TDA

Individuals with higher earnings might consider alternatives or supplements to a TFSA for the following reasons:

- They are not able to achieve their retirement income targets using a TFSA alone;
- They can use a combination of TFSA withdrawals, pension income splitting and other arrangements to take advantage of the lower effective marginal tax rates applicable to retirement income in the $25,000 to $45,000 range;
- They intend to retire earlier than age 67 and use non-TFSA savings to provide living expenses and TFSA contributions during their early retirement years; or
- They intend to retire in a jurisdiction such as the United States where TFSA investment income would be taxed more heavily than investment income inside a TDA.

Is a TDA always preferable to alternatives involving immediate taxation of investment earnings? Perhaps not, since withdrawals from a TDA are taxable as ordinary income. A TDA leads to the forfeiture of dividend tax credits, capital gains exclusions, and foreign tax credits.

A TDA is superior to a non-registered investment if an individual is subject to the same effective marginal tax rates on withdrawals as on contributions. Tax-free investment returns are always better than taxable investment returns, no matter how low the tax rates are on dividends and capital gains. This advantage of tax deferral is illustrated in the table below. A lower tax rate is used for investment earnings in the illustration, to reflect the adjustments that apply to non-sheltered capital gains and dividends, and to reflect the deferral of taxation on unrealized capital gains.

Extra after-tax income from tax-sheltered investing

Tax Rate on Contributions	35%
Tax Rate on Investments	20%
Tax & Clawback Rate on Withdrawals	35%

	Average annualized pre-tax rate of return								
Time Horizon	1%	2%	3%	4%	5%	6%	7%	8%	9%
5	1.0%	2.0%	3.0%	3.9%	4.9%	5.9%	6.8%	7.7%	8.7%
10	2.0%	4.0%	6.0%	8.0%	10.0%	12.1%	14.1%	16.1%	18.1%
15	3.0%	6.1%	9.2%	12.3%	15.4%	18.6%	21.8%	25.1%	28.4%
20	4.0%	8.2%	12.4%	16.7%	21.1%	25.6%	30.1%	34.8%	39.5%
25	5.1%	10.3%	15.7%	21.3%	27.0%	32.9%	39.0%	45.2%	51.6%
30	6.1%	12.5%	19.2%	26.1%	33.3%	40.7%	48.5%	56.5%	64.8%
35	7.2%	14.7%	22.7%	31.0%	39.8%	49.0%	58.6%	68.6%	79.1%
40	8.3%	17.0%	26.3%	36.2%	46.6%	57.7%	69.4%	81.7%	94.7%
45	9.3%	19.3%	30.1%	41.6%	53.8%	66.9%	80.9%	95.7%	111.6%
50	10.4%	21.7%	33.9%	47.1%	61.4%	76.7%	93.2%	110.9%	129.9%

For example, with an average annualized pre-tax rate of return of 5% and a tax rate on investments of 20%, the after-tax rate of return on non-registered investments is 4%. After 20 years, an initial $1,000 tax-deductible investment grows to 1.05^{20} times the original amount, or $2,653, while a non-registered investment grows to 1.04^{20} or $2,191. Assuming the same 35% tax rate applies to both contributions and withdrawals, the after-tax income from tax-sheltered investing is 21.1% bigger.

In the high interest rate environment of the 1970s and 1980s, investment tax deferral was the most important advantage of a TDA. This advantage far outweighed any potential clawbacks during retirement, provided the investment time horizon was more than a few years. Maximizing TDA contributions before considering any other form of saving was invariably the best strategy.

The effect of clawbacks can be seen in the table below, showing the advantage of tax-deferral when the effective marginal tax rate is higher on withdrawals than on contributions. If the combined effect of taxes and clawbacks is to take away 50% of the benefit from a TDA (instead of 35% in the table above), then an initial $1,000 tax-deductible investment to a TDA grows to $2,653 before withdrawal but only $1,327 on an after-tax basis. An equivalent $650 after-tax investment in a non-registered account grows to $1,424. So in this situation, the after-tax income from tax-sheltered investing is 6.9% smaller than investing in a non-registered account. Note that the 20% average tax rate on investment earnings has to reflect any clawbacks during the portion of the investment period that is after age 67.

Extra after-tax income from tax-sheltered investing

Tax Rate on Contributions	35%
Tax Rate on Investments	20%
Tax & Clawback Rate on Withdrawals	50%

	Average annualized pre-tax rate of return								
Time Horizon	1%	2%	3%	4%	5%	6%	7%	8%	9%
5	-22.3%	-21.6%	-20.8%	-20.0%	-19.3%	-18.6%	-17.8%	-17.1%	-16.4%
10	-21.5%	-20.0%	-18.4%	-16.9%	-15.4%	-13.8%	-12.2%	-10.7%	-9.1%
15	-20.8%	-18.4%	-16.0%	-13.6%	-11.2%	-8.8%	-6.3%	-3.8%	-1.3%
20	-20.0%	-16.8%	-13.5%	-10.2%	-6.9%	-3.4%	0.1%	3.7%	7.3%
25	-19.2%	-15.1%	-11.0%	-6.7%	-2.3%	2.3%	6.9%	11.7%	16.6%
30	-18.4%	-13.5%	-8.3%	-3.0%	2.5%	8.2%	14.2%	20.4%	26.8%
35	-17.6%	-11.7%	-5.6%	0.8%	7.5%	14.6%	22.0%	29.7%	37.8%
40	-16.7%	-10.0%	-2.8%	4.8%	12.8%	21.3%	30.3%	39.7%	49.7%
45	-15.9%	-8.2%	0.1%	8.9%	18.3%	28.4%	39.1%	50.6%	62.7%
50	-15.1%	-6.4%	3.0%	13.2%	24.1%	35.9%	48.6%	62.2%	76.9%

While clawbacks are less important than tax-free compounding of investment returns when the compounding period is long and interest rates are high, they are more important for older workers in a low interest rate environment. In the low interest rate environment expected in the future, clawbacks have the potential to outweigh the importance of tax-sheltered investment accumulation.

Differentials in the effective marginal tax rate between contributions and withdrawals of the magnitude illustrated in the second table above (35% on contributions versus 50% on withdrawals) will not arise routinely:

- GIS benefits are mostly clawed back by C/QPP benefits alone, so the portion of TDA withdrawals that will be subject to GIS clawbacks is typically quite small – especially if C/QPP benefits are postponed to age 67 when GIS commences.
- Individuals with lower incomes will be able to rely entirely on the TFSA system to avoid GIS clawbacks on TDA withdrawals.
- The effective marginal tax rate on TDA contributions for individuals with higher incomes will be higher – closer to the effective marginal tax rate on TDA withdrawals in the GIS clawback range.
- Individuals who have enough post-retirement income to reach the OAS clawback range will typically have high pre-retirement effective marginal tax rates.

Situations like the one illustrated above could arise for an individual with moderate employment income if income from other sources (e.g., transferred from a spouse through spousal RRSP contributions, pension income splitting, death, or divorce) in combination with TDA income and investment income is likely to push total taxable earnings after retirement into the OAS clawback range ($72,809 to $117,908 in 2015). Situations like the one illustrated above could also arise for an individual with a small early retirement benefit from C/QPP who uses non-registered funds first and postpones commencement of TFSA withdrawals. (Alternate versions of this illustration for situations with different tax rates may be prepared using the spreadsheet posted here.)

Finally, this analysis suggests that efforts to maximize the value of TDA benefits for high-income employees and minimize the portion of a total retirement benefit that must be paid from a supplemental non-registered savings plan will not be as important in a low interest environment as they have been in the past.

Stocks and Bonds, Registered and Non-registered

Most actuarial analysis of asset mix strategies is conducted within the context of a single, stand-alone registered retirement income plan. The objective is an optimal mix of stocks, bonds, and other investments, relative to the retirement income goals and the tolerances of the party responsible for investment risks. Little analysis has been done of investment strategies for situations in which individuals' retirement goals will be met through a combination of TDAs, TFSAs, and non-registered investments[13].

One possible approach would be to apply the same asset mix across all platforms, but this ignores the variations in tax between different classes of investments. Conventional wisdom tells us that an individual with both registered and non-registered funds should put interest-bearing securities inside an RRSP or other registered account and equities in a non-registered account. Conceptually, the optimal asset mix would be determined for the aggregate of all plans, and assets would be assigned to plans in a way that minimizes taxation of investment earnings.

In a low interest-rate environment, the equity risk premium is large relative to the yield on fixed income investments. It is possible that taxes on stocks will be more important than taxes on bonds. For example, if the tax rate on capital gains and dividends is 20% and the tax rate on interest income is 40%, there would appear to be a strong incentive to assign bonds to a registered account. But if the expected return on stocks is 8% and the expected return on bonds is 3%, then the expected 1.6% tax on stocks is more important than the 1.2% tax on bonds. Switching from bonds to stocks in the non-registered account and switching an equal amount of stocks to bonds in the registered account would not affect the overall pre-tax rate of return but would increase the expected tax by 0.4% of the reallocated assets.

The downfall of this reasoning is that higher rates of return tend to be accompanied by higher risk. When determining the overall riskiness of an investment portfolio, adjustments for

[13] In contrast, there has been a great deal of analysis of the allocation of equity and debt investments to a defined benefit pension plan in combination with a taxable corporate sponsor, with the objective of maximizing shareholder value. See, for example, J. Gold, June 2015, "The Intersection of Pensions and Enterprise Risk Management", Pension Forum 20 (1), Society of Actuaries.

differences in taxation of contributions and withdrawals and for differences in investment returns would seem to be required:

- With a 50% effective marginal tax rate on TDA contributions and withdrawals, a dollar in a TFSA can provide as much retirement income as two dollars in a TDA. Volatility of retirement income due to risky investments is also magnified by a factor of two.
- A dollar in a TFSA generates more retirement income and more risk than a dollar in a non-registered investment account as a result of tax-free compounding, but the extra value depends on the investing time horizon, the long-term rate of return, and the tax rate applicable to the asset type.
- Risky investments generate more risk to retirement income in a TFSA than in a non-registered account because taxes dampen the fluctuations in investment returns in the non-registered account.

If adjustments are made to asset mix so that the overall variance in projected retirement income is the same regardless of the allocation to registered or non-registered accounts, then the conventional view is confirmed. Preference should be given to bonds in a registered account and equities in a non-registered account. For example, if the TFSA and the non-registered account are the same size, allocating the entire TFSA to bonds and the entire non-registered account to stocks (a 50/50 asset mix overall, before considering tax effects) is no more risky than allocating 60% to bonds and 40% to stocks in both accounts, and has a better expected return[14].

Foreign Investments

Interest and dividend income from foreign securities is usually taxed by the country where the securities are issued and then taxed again by the country where the owner is domiciled. Rates of taxation on non-resident investors are determined by international tax treaties. A rate of 15% is common. For wealthy individuals with non-registered investments, this is a non-issue, because they receive full credit for foreign taxes when their average Canadian tax rate is more than 15%.

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[14] This assumes

- A 15-year investment horizon;
- An 8% return and a 20% tax rate on stocks; and
- A 3% return and a 40% tax rate on bonds.

For this analysis, it is convenient to think of bonds as liability-driven investments and stocks as return-seeking investments. Liability-driven investments are considered risk-free, on the presumption that they will deliver the desired level of retirement income when it comes due, irrespective of fluctuations in market prices in the meantime. The standard deviation of return-seeking investments reflects fluctuations in their market price different from fluctuations in the market price of liability-driven investments. The historical volatility of equities measured in these terms is not much different from their nominal volatility, although the absolute level of volatility does not affect the conclusion.

Canadians with lower incomes do not receive full credit for foreign withholding taxes on non-registered investments, and, as a consequence, the effective marginal tax rate on Canadian income can be lower that it would be in the absence of foreign taxes.

Foreign withholding taxes on securities held inside a registered account are not recoverable. Thus, it is not strictly accurate to say that a TFSA or TDA is entirely exempt from taxation of investment income. The United States applies withholding taxes to a TFSA but not to a Canadian TDA.

Securities issued in other countries and purchased for a TDA in U.S. markets (American Depository Receipts) or pooled U.S. equity investments purchased in Canada (principally Exchange Traded Funds and currency-hedged mutual funds that use a wrapper approach) can be subject to tax. In extreme cases, supposedly tax-sheltered investments can be subject to multiple layers of unrecoverable foreign taxes. For defined benefit pension plans, this is typically only a concern with real estate investments in the United States and non-North American investments. For capital accumulation plans, it can affect a broader range of investments, and tilt the balance in favour of non-registered investing.

The issue of foreign taxes is widely ignored, since the overall impact is perceived to be modest. For example, if an RRSP has a 20% allocation to non-North American investments and the dividend yield on those investments is 2%, then the drag on total investment return is only 0.06% per annum (a 15% tax on 2% dividends in 20% of the portfolio).[15]

Other Asset Allocation Considerations

Note the following:

- The tax rate on Canadian dividends will be particularly low for low-income individuals, since the dividend tax credit does not vary by earnings level.
- The tax rate on capital gains will be lower with a buy-and-hold or index investing strategy, because capital gains taxes are not incurred until gains are realized.
- Fees often vary by asset class and can be quite important in a low-interest environment.
- Tax planning is more difficult when risky investments are involved. A strategy designed to avoid OAS clawbacks could miss the mark if return-seeking assets produce significantly more or less income than expected. However, this concern has been somewhat alleviated by 2015 tax changes permitting lower minimum withdrawals from Registered Retirement Income Funds.

[15] The effect of foreign taxes is not always small. For a more complete discussion of these issues, see Justin Bender, and Dan Bortolotti, *Foreign Withholding Taxes: How to Estimate the Hidden Tax Drag on US and International Equity Index Funds and ETFs*. Toronto: PWL Capital, February 2014), https://www.pwlcapital.com/pwl/media/pwl-media/PDF-files/Justin%20Bender%20Assets/PWL_Bender-Bortolotti_Foreign-Withholding-Taxes_v04_hyperlinked.pdf?ext=.pdf.

- There is added value from regular rebalancing, a service typically provided by a balanced fund manager but often overlooked when rebalancing across accounts is the responsibility of the individual investor.

In summary, when interest rates are high, allocating investments by tax status is important. When interest rates are low, the relatively high expected taxes on dividends and capital gains reduce the benefit. The dampening effect that taxes can have on risk means allocation by asset class is still effective, but only on a risk-adjusted basis. The net advantage of allocation by tax status might be outweighed by factors such as fees and rebalancing premiums in a low interest rate environment.

Considerations for Employers

Employer or Employee Contributions

An employer-sponsored TDA can be designed with contributions by the employer or the employees or a combination of both. Employer contributions are excluded from taxable earnings, while employee contributions are deductible to the employee. The design choice will be influenced by interest rates.

For low-income employees, the key difference between employer and employee contributions is the effect on social insurance benefits and costs, including C/QPP, EI, and workers' compensation. Employer contributions to a TDA are not included in the earnings base for social insurance, and so they lead to lower contributions and benefits. With high interest rates, extra contributions to a fully funded retirement savings plan have the potential to produce more retirement income than contributions to C/QPP. Shifting TDA contributions from employees to the employer to save C/QPP contributions can prove beneficial. With low interest rates, the reverse could be true.

For high income employees, social insurance contributions and benefits will be at the maximum rate, regardless of who makes the contributions. There may be other payroll taxes, such as the Ontario Employer Health Tax, and these will favour employer contributions over employee contributions. Note, however, that for employees earning less than $140,000 in 2015, the limit on defined contributions to a TDA will be determined as 18% of taxable income, rather than by the dollar limit. This 18% limit is lower when the contributions are made by the employer. For example, with an employer making no contributions, an employee can contribute up to $18,000 on taxable earnings of $100,000. If the total of earnings and employer contributions is to remain fixed at $100,000, the employer can contribute only $15,250 on taxable earnings of $84,750. In a low interest rate environment, this lower limit might be insufficient to achieve the employer's goals for early retirement.

Early Retirement

Conventional wisdom tells us that an individual retiring early with both registered and non-registered investments should use their non-registered funds first, to maximize the period of tax-sheltered investment compounding. However, in a low interest rate environment, it is possible that OAS clawbacks, income-splitting opportunities, TFSA contribution room, or the relative advantages of equity investing outside of a registered account will favour earlier collapse of registered investments.

The defined benefit pension plans of the past were often designed to discourage employees from leaving prior to a target early retirement age and to encourage early retirement for older employees whose pay had reached a plateau. If managing retirement age is still an employer objective, it is possible that a combination of a TDA and a group TFSA could create similar incentives.

An employee reaching early retirement age with a TDA balance and C/QPP early retirement benefits sufficient to provide for living expenses and TFSA contributions from his or her current age to age 67 will face a dilemma. If the employee retires, his or her TFSA, together with C/QPP, OAS, and partial GIS benefits will provide sufficient income after age 67. If the employee keeps working, he or she will be forced to draw down his or her TDA[16] during a period with a high effective marginal tax rate – either while the employee is still working or after he or she begins receiving OAS. The after-tax benefit of continuing to work past early retirement age will be attractive only if the pay is relatively high.

Locking In

When employers support employee savings plans, they often do so with the expectation that funds will be allowed to accumulate throughout their employees' working careers, so that older workers will actually be able to retire when their abilities and performance fail to keep pace with workplace demands. Similarly, when governments provide tax advantages for retirement savings plans, they do so on the premise that individuals who participate in these plans will be protected from poverty and indeed pay taxes to support government services during their old age.

Benefits from registered pension plans are locked in and protected from creditors by law. They cannot be commuted while an employee is working and the plan is ongoing, and (with modest exceptions) they cannot be used for any purpose other than lifetime retirement income, even if the value of the benefits is transferred out of the pension plan. Withdrawals from a DPSP, EPSP,

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[16] A registered pension plan can only be used to provide bridge benefits, lifetime pensions, and survivor benefits. There is no limit on bridge benefits from a defined contribution registered pension plan, so the entire account balance could be paid out in the years up to age 65. The limits on bridge benefits from defined benefit pension plans would prevent a generous DB plan from being converted entirely into pre-65 payments.

Group RRSP, or Group TFSA prior to termination of employment may be restricted as a condition of the plan, although this is relatively uncommon in an RRSP or TFSA. When shifting from a registered pension plan to another type of retirement arrangement, an employer accepts that funds might not be used for lifetime income.

Alternatives to Retirement Income

Part of the reason that TDA income might not be the most desirable option for employees is that there are alternatives to income for preparing for retirement. The most important of these is home ownership.[17] In Canada, mortgage interest is not tax-deductible, and capital gains on sale of a principal residence are not taxable. This makes home equity an attractive approach to building wealth.

Another key way to reduce the need for taxable income to meet living expenses during retirement is to arrange for retiree health care costs to be paid or reimbursed through an employer plan. Once again, the tax system offers several options:

1. Unfunded plans to provide tax-free benefits during retirement;
2. Tax-exempt pre-funded benefits through Employee Life & Health Trusts or Fraternal Benefit Societies; and
3. Funded, taxable health services plans.

Other Retirement Savings Arrangements for Highly Paid Employees

In addition to the various TDA approaches, TFSA and non-registered investing, there are other options for employer-sponsored retirement benefits in excess of the income tax limits. Employers can provide a funded Retirement Compensation Arrangement (RCA), an unfunded Supplementary Employee Retirement Plan (SERP), annuities or life insurance purchased with after-tax funds, or some combination of these approaches.

Key factors in the effectiveness of unfunded arrangements are:

1) Corporate taxes paid by the employer; and
2) The employer's internal cost of capital.

For a tax-exempt employer, an unfunded arrangement can be just as effective as a TDA. The primary concern is the absence of third-party security.

[17] According to the Statistics Canada Survey of Financial Security, 2012 (http://www.statcan.gc.ca/daily-quotidien/140225/t140225b002-eng.htm, CANSIM table 205-0002), 62.5% of households owned their principal residence in 2012 and half of these were mortgage-free. Among households age 65+, 70.8% owned their principal residence and only 10.3% had an outstanding mortgage on their principal residence. The prevalence of both home ownership and mortgages amongst Canadian seniors has increased from previous surveys in 1999 and 2005.

Funded excess arrangements are generally less tax-effective than a TDA or TFSA. The choice among funded arrangements (including after-tax saving in a personal investment account or EPSP) will depend on circumstances. Taxation of investment income from insurance products (both inside the insurance company and in the hands of the individual owner) is complicated and far from transparent. Once again, choices made in a high interest environment might not stand up to scrutiny in a low interest rate environment.

Retirement Savings Plan Design Challenges

Plan design decisions will be difficult for employers in the next few years. The TFSA system was introduced in 2007, and so older workers cannot rely on it for their entire retirement income strategy. Younger workers will be able to take advantage of the new TFSA system over their entire adult lifetime, but it would be premature to redesign employer-sponsored plans around the current regime.

The current regime of GIS and OAS clawbacks that ignore TFSA balances might not be sustainable forever. GIS and provincial supplements in particular are intended to alleviate poverty, with benefits targeted at individuals who did not earn enough during their working careers to save for retirement, purchase a home, or qualify for significant C/QPP benefits. It would be odd for these income-tested benefits to be paid to middle-class retirees who have accumulated TFSA balances at retirement of a million dollars or more.

Providing employees with the financial education and tools required to set realistic retirement goals and investment choices is challenging. Adding tax options to the current mix only makes matters worse. Even the assistance of a personal financial advisor might not be sufficient.

The fact that fees for financial services to plan members are typically determined as a percentage of assets under management presents another challenge. Balances in a TDA are much larger than balances in a TFSA or other arrangement designed to provide equivalent after-tax income. How can the same level of service be provided to TFSA investors and RRSP investors, when the fee structure typically does not distinguish between the two?

There is no question that the decline in interest rates over the past three decades has changed everything about retirement income plan design. Replacement ratio targets that were set in the 1980s are less realistic today. Squeezing extra retirement income out of better tax and investment strategies helps, but does not address the fundamental problem of affordability. Some employers (and individuals and financial planners) will resist retirement savings strategies that are predicated on the defeatist view that interest rates will not increase in the years ahead. For these employers, a movement away from tax-deferred saving or other design changes predicated on a prolonged period of low interest rates will not make sense. For employers who accept the need for fundamental change, the considerations presented here will be relevant and useful.

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The Canadian Institute of Actuaries (CIA) is the national organization of the actuarial profession. Member driven, the Institute is dedicated to serving the public through the provision, by the profession, of actuarial services and advice of the highest quality. In fact, the Institute holds the duty of the profession to the public above the needs of the profession and its members.

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Canadian Institute of Actuaries
360 Albert Street Suite 1740
Ottawa, Ontario KIR 7X7
www.cia-ica.ca

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Society of Actuaries
475 N. Martingale Road, Suite 600
Schaumburg, Illinois 60173
www.soa.org