



SOCIETY OF ACTUARIES

Article from:

# Pension Section News

March 2000 – Number 42



## A Memo...

### Chairperson's Corner

by Colin England

I am the new Pension Section Chairman. Many of you may have met me before, at Enrolled Actuary meetings, at Society meetings or at one of my jobs. I invite the rest of you to introduce yourselves at the EA meeting, the Spring or Annual meeting.

The mission of the Pension Section is to:

- Provide or support educational opportunities to its members
- Support research that will enhance the ability of its members to work with their clients.

It's a simple mission, but a critical one in a constantly changing world. We're responsible for a wide variety of activities that support this mission, from commissioning studies on mortality and termination experience to arranging seminars on topics such as cash balance plans, mergers and acquisitions and the

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## Tax Assistance to Qualified Retirement Savings Plans: Deferral or Waiver?

by Robert L. Brown

**Editor's Note:** This article is reprinted with permission by Absalom Press and Robert L. Brown. It previously ran in the Journal of Actuarial Practice, Vol. 2, No. 1, 1994, and is still relevant today.

### Abstract

There exist significant tax incentives for retirement savings plans in Canada and the United States. Qualified employer and employee contributions, within limits, are tax deductible to the employer and nontaxable to the employee. Also, investment income is not taxed until taken. On the other hand, monies received from funds having such tax incentives are taxable in full as income to the recipient when taken. This paper analyzes the two tax advantages of qualified retirement savings plans: the tax deductibility of contributions and the nontaxation of investment income until it has been distributed. The algebraic analysis shows that the deductibility of contributions represents a deferral of tax, but that it does not create any permanent loss of revenue to the government. On the other hand, the algebra indicates that there is a permanent tax subsidy associated with the deferred taxation of investment income.

Canadian and United States laws provide significant tax incentives for individuals to save for retirement through qualified vehicles. There are two tax incentives provided in the United States and Canada:

- 1) Employer contributions to qualified plans are tax deductible to the employer and nontaxable to the employee. For employees and individuals saving for retirement

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through qualified vehicles, their contributions, within limits, are also tax deductible (e.g., IRAs, 401(k) plans in the United States and RRSPs in Canada<sup>1</sup>).

2) For these qualified plans, the investment income earned on the pension funds is not taxable until it is paid out. Income derived from these funds, however, is fully taxable to the individual who receives it.

What is the value of these tax incentives? In particular, do these incentives effectively result in deferred taxes, or is the outcome a waiver of taxes?<sup>2</sup>

It often is stated that these incentives represent only tax deferral and are not a tax expenditure or permanent tax subsidy. For example, Johansen (1993) states:

But when the plan starts paying out benefits, the recipients will have to pay the appropriate income

Tax on those benefits. So the tax-exempt status of qualified pension plans creates a tax deferral—not a tax expenditure.

Similarly, in a discussion of Aitken's (1991) paper that claims there is a permanent tax subsidy implicit in the non-taxation of the annual investment income earnings, Flanagan (1991) states:

One does not need to be an actuary to realize that the author's fundamental point is flawed. There is tax on the in-

vestment income accumulating in a registered plan, but the tax on the investment income, like the tax on the principle, is deferred until the payout period.

The objective of this paper is to review the two tax incentives (cited earlier) that are provided to retirement savings vehicles and to determine algebraically whether such incentives are essentially tax deferrals or if they result in a tax waiver. The paper also will present a summary of the tax advantages associated with alternate savings vehicles. It is well-known (and obvious) that for persons who expect to be in a lower tax bracket after retirement than before retirement (which often is expected), there are permanent tax advantages to using qualified savings vehicles to save for retirement. Thus, this paper will not investigate that particular aspect of the tax advantages.

***Advantage of Alternative Savings Vehicles***

What are the tax advantages associated with the ability to take a tax deduction for contributions made to a qualified vehicle? To explore this issue, the following notation is needed: *T* is the marginal tax rate; *I* is the gross investment rate of return (for all investments) per annum; *i* is the net rate of return per annum; *C* is the before tax contribution; and *n* is the time from contribution to withdrawal.

To simplify the presentation, the following assumptions are made:

1. *T*, *I*, *C*, and *i* are constant throughout the period under consideration, *n* years. In addition, they do not vary by whether the fund is a qualified fund or not or whether the fund is private or public.
2. The marginal tax rate is the same before and after retirement.
3. The value of a tax incentive is defined to be the difference between the accumulated value of certain defined contributions without and with the tax incentive.<sup>3</sup>

***The Tax Deductibility of Contributions***

What advantage is gained purely from the tax deductibility of contributions? To determine this advantage, it will be assumed that the rate of return on the funds is the after-tax rate, so

$$i = I \times (1 - T).$$

Table 1 shows that the after-tax accumulated incomes for qualified and non-qualified vehicles are equal (ignoring the effects of taxes on investment income).

<b>Table 1 After-Tax Accumulations</b>		
	<u>Qualified Vehicle</u>	<u>Nonqualified Vehicle</u>
Contribution:	<i>C</i>	<i>C</i> (1- <i>T</i> )
Accumulated Value:	<i>C</i> (1 + <i>i</i> ) <sup><i>n</i></sup>	<i>C</i> (1- <i>T</i> ) (1 + <i>i</i> ) <sup><i>n</i></sup>
After-tax Income:	<i>C</i> (1- <i>T</i> ) (1 + <i>i</i> ) <sup><i>n</i></sup>	<i>C</i> (1- <i>T</i> ) (1 + <i>i</i> ) <sup><i>n</i></sup>

It is clear that the tax advantage associated with the deductibility of contributions is purely an advantage of tax deferral. If one's marginal tax rate is the same before and after retirement, then there is no permanent tax waiver or tax subsidy associated with the deductibility of contributions.

**Nontaxation of Investment Income**

Within the qualified vehicle, funds grow at a rate of  $I$  per annum. Income derived from these funds is taxed at the marginal rate,  $T$ , when disbursed. Within the non-qualified plan, funds will grow at rate  $i = I(1 - T)$  per annum, but funds will not be taxed when taken out.

Again, consider a before-tax contribution of  $C$  within either a qualified or nonqualified vehicle. For the qualified plan, the net receipt to the retiree is  $C(1 - T)(1 + i)^n$ , while for the non-qualified plan it is  $C(1 - T)(1 + I)^n$ . One must remember that the tax deductibility of the contribution provides no net gain and explains none of the difference between the two values above. Thus, the gain represented by the difference of the two values above can be categorized as coming from the difference in the taxation of investment income. That gain is:

$$C(1 + I)^n(1 - T) - C(1 - T)(1 + i)^n = C(1 - T)[(1 + I)^n - (1 + i)^n]$$

As  $i = I(1 - T)$ , it follows that  $i < I$ ; there must be a net gain. A numerical example illustrates these points. You are given the following information:

**Before-tax contribution:**

$$C = \$2,000$$

**Marginal tax rate:**

$$T = 40\%$$

**Gross rate of return per annum:**

$$I = 7\%$$

**Net rate of return per annum:**

$$i = 0.07(1 - 0.40) = 4.2\%$$

**Time from contribution to withdrawal:**

$$n = 30 \text{ years.}$$

Using a qualified vehicle, the retiree receives:

$$\$2,000(1.07)^{30}(1 - 0.40) = \$9,134.71.$$

On the other hand, using a nonqualified vehicle yields the retiree:

$$\$2,000(1 - 0.40)(1.07)^{30} = \$4,123.00.$$

The net gain to the retiree by using the qualified fund is \$5,011.71. But what is the source of this \$5,011.71 gain?

One must conclude that the \$5,011.71 comes from a direct tax waiver or subsidy. To prove this assertion, look at the tax revenues that accrue in each situation. For the qualified fund, the government gets:

$$C \times T \times (1 + I)^n = \$6,089.80 \text{ at } t = 30.$$

In the nonqualified fund, however, the government gets  $C \times T = \$800$

immediately which, at time  $t = 30$ , is worth:

$$C \times T \times (1 + I)^n = \$800(1.07)^{30} = \$6,089.80.$$

Thus, as proven before, there is no tax waiver or subsidy associated with the tax deductibility of contributions, only tax deferral. Under the nonqualified fund, however, the government receives additional taxes: the taxes on the yearly investment income on the fund. In this example, the accumulated value of this tax on annual investment income at time  $t = 30$  is:

$$C \times (1 - T) \times T \times I \times \sum_{k=0}^{t-1} (1 + I)^k$$

$$(1 + I)^k (1 + I)^{t-1-k} = \$5,011.71.$$

That is, the gain to the retiree who uses a qualified fund is equal to the permanent tax revenue loss to the government under the assumptions given.

The nontaxation of the investment income on the qualified fund until taken as income clearly is a permanent tax waiver, not a tax deferral.

**Extensions**

The expressions for the tax impact on qualified pension funds, derived in Section 2, can be adjusted to include other insurance and savings vehicles. Table 2 presents the tax effects in summary form.

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Vehicle	Taxes?	Frequency of Taxes	Rate of Taxation	After-tax Accumulation
MF	Yes	Annually	C-Gains	$[1 + I(1 - gT)]^n$
MMF	Yes	Annually	Ordinary	$[1 + I(1 - T)]^n$
IP	Yes	Never	Exempt	$(1 + I)^n$
SPDA	Yes	Deferred	Ordinary	$(1 + I)^n(1 - T) + T$
PF	No	Deferred	Ordinary	$(1 + I)^n$
FC	Yes	Deferred	C-Gains	$(1 + I)^n(1 - gT) + gT$

MF = Mutual Funds; MMF = Money Market Funds;  
 IP = Insurance Policies; SPDA = Single Premium Deferred Annuities;  
 PF = Pension Funds; FC = Foreign Corporations; and  
 C-Gains = Capital Gains; and  $gT$  = The capital gains tax rate.

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The following is a brief description of the various savings vehicles.

- **Money Market Funds (MMF):** This vehicle is the ordinary savings account. Deposits are not tax deductible, and investment income normally is taxed fully each year at ordinary tax rates. This is the least advantageous of the savings vehicles.
- **Mutual Funds (MF):** These refer to those mutual funds that are not money market funds. Here deposits are not tax deductible. Investment income is taxed at the capital gains tax rate, however, which is given in the table as rate  $gT$ . In the United States current tax rates for capital gains are subject to a 28% limitation, while there is no such limitation on ordinary income. Dividend and interest received by the mutual fund and capital gains realized by the mutual fund are taxable to shareholders annually.
- **Insurance Policies (IP):** This category refers to those insurance policies that have achieved exempt status. While deposits are not tax deductible, the earnings on the investment are entirely tax exempt. The gain on disposition is taxable in the hands of policyholders unless the proceeds are paid as a death benefit. Further, the insurance company pays some tax on its investment income.
- **Single Premium Deferred Annuities (SPDA):** Deposits are not tax deductible, but the taxes on the investment income are deferred until the policyholder takes the money out as income. The same applies to the IRA contributions that are not deductible because the owners have income above certain limits specified by law. The Tax Reform Act of 1986 in the United States eliminated the ability of corporations and partnerships to defer tax with single premium deferred annuities. Only individual investors

can use SPDAs to defer tax on the investment income. Also there exists an excise tax of 10% if the SPDA is surrendered, in whole or in part, prior to age 59.5 unless the withdrawals take the form of a life annuity. Finally, the insurance company pays some tax on its investment income.

- **Pension Funds (PF):** The tax advantages of qualified pension funds have been discussed in detail previously. When tax rates are constant over time, insurance policies that are tax exempt are equivalent to pension funds that are qualified.
- **Foreign Corporations (FC):** Again, deposits are not tax deductible; however, the tax on the earnings is deferred and taxed at capital gains rates when the investment is liquidated. Examples include an investment in the common stock of an investment company located in a tax haven or bond investments held by corporations in tax havens.<sup>4</sup>

When  $g = 0$ , mutual funds, foreign corporations, insurance policies, and pension funds are equivalent vehicles. When  $g = 1$ , investments in foreign corporations and single premium deferred annuities are equivalent.

In general, it is more accurate to list the accumulated value of the dollar invested in the qualified pension fund as  $[(1 - T_n) / (1 - T_0)] (1 + I)^n$  where  $T_n$  and  $T_0$  represent the marginal tax rates at the time of the contribution ( $t = 0$ ) and at the time of withdrawal ( $t = n$ ). This paper assumes that these two tax rates are the same. But one would expect the marginal rate  $T_n$  to be slightly less than  $T_0$  which, as mentioned previously, provides a further tax advantage.

### Conclusions

This paper has looked at the tax incentives provided in several savings vehicles and qualified pension funds in particular. The paper has shown that the tax advan-

tage associated with the deductibility of tax contributions is one of tax deferral, but not tax avoidance or permanent tax waiver. On the other hand, the paper shows that the tax advantage associated with the nontaxation of investment income on qualified funds until taken is a tax waiver or tax subsidy from the government to participants of qualified plans.

Further public policy debate on the impact of tax concessions is needed. The author hopes that this paper will spark such a debate and assist in an intelligent discussion.

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### Footnotes

- 1) This is not meant to be an exhaustive list. Any plan with these tax advantages is meant to be included, such as some profit sharing plans.
- 2) In this paper, the term *tax deferral* means that for that particular tax provision the accumulated value of the taxes paid is the same with or without the provision. Note that the deferral still may be viewed as advantageous. If the accumulated value of the taxes paid with the provision is smaller than that paid without the provision, however, then the provision results in a *tax waiver*.
- 3) Further possible investment or expenditure considerations are beyond the scope of the illustrations contained herein.

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## *The 1999 Technical Panel on Assumptions and Methods*

by Edward W. Frees

**T**he first Technical Panel of the Social Security Advisory Board summarized its findings in a report released in November 1999.

Created with legislation enacted in 1994, the Social Security Advisory Board is an independent, bipartisan group. The Advisory Board assumed the role of Advisory Councils in appointing technical panels to advise on the assumptions and methods used in the Trustees Report to evaluate the status of Social Security Trust Funds. The 1999 Technical Panel also examined issues regarding equity investments as well as other assumptions and methods needed to evaluate various reform proposals. The panel was composed of seven economists, two demographers, and three actuaries.

Regarding the Trustees Report that is produced by the Social Security Administration's Office of the Chief Actuary, the panel affirmed that the methods and assumptions used are reasonable and accurate. However, the panel recommended some small changes in the assumptions used, particularly regarding overly pessimistic mortality assumptions. Further, the panel called for additional research on various issues pertaining to the uncertainty of future Trust Fund balances. Copies of the report are available from the Social Security Advisory Board, 400 Virginia Avenue, SW, Suite 625, Washington DC, 20024, [www.ssab.gov](http://www.ssab.gov).

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## *Office of the Joint Board Memorandum*

by Patrick McDonough,  
Executive Director, Joint Board  
for the Enrollment of Actuaries

**I** am pleased to announce the appointment of two full-time members of the Office of the Joint Board:

- 1) Elizabeth VanOsten, as Attorney-Advisor, and
- 2) Gloria Walker, as Program Analyst

Ms. VanOsten, who comes to us from a position as a Tax Law Specialist in the Employee Plans Division of I.R.S., will work closely with me in the overall supervision and management of the Office. She will also assume primary responsibility for the processing of disciplinary cases that are presented to us under the terms of the Joint Board regulations. Her telephone number is (202) 694-1855.

Ms. Walker, who was formerly a Program Analyst in the office of the National Chief of (I.R.S.) Appeal, will handle all the regular administrative work of the Joint Board. She takes over the functions temporarily assumed by Karen Copeland after the departure of Darryl Carter. Ms. Walker can be reached by telephone at (202) 694-1854.

Please join me in welcoming these two people to our program and feel free to call them to discuss any matters concerning the work of the Joint Board Office.

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- 4) A tax haven is a country or other political entity that offers outside businesses and individuals a climate of minimal or nonexistent taxation. In some cases, the low taxes apply not only to those levied by the tax haven itself, but also to the possibility of reducing or avoiding taxes levied in the investor's home country (Scott, 1988, p. 353).

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