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# Evaluating Public-Sector Pensions: How Much Do They Really Cost?

*In the real world guarantees are expensive. Public-sector accounting standards that suggest otherwise in the case of pensions mislead taxpayers, politicians and senior public servants about the cost of these guarantees and the cost of the pension plans providing them.*

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## The Study In Brief

Public-sector pension plans in Canada are generally large, efficient and well managed. Funding levels are healthy when compared to private-sector pension plans in Canada and public-sector pension plans elsewhere.

And yet, all is not well.

There are large differences between the fair values of the pensions earned by public-sector employees and the "cost" of these pensions according to public-sector financial statements. These differences arise almost entirely from the pricing of guarantees. Specifically, the financial markets attach high values to the guarantees embedded in public-sector pension plans while government financial statements attach little or no value to these guarantees. This means that pension costs are materially understated and, as a consequence:

- employees in the public sector are paid more than is publicly acknowledged and, in many instances, more than their private-sector counterparts;
- public-sector employees shelter more of their retirement savings from tax than other Canadians are permitted to shelter; and
- taxpayers bear much of the investment risk taken by public-sector pension plans while the reward for risk-taking goes to public employees as higher compensation.

Private-sector pension accounting standards long ago rejected the premise at the heart of today's public-sector accounting standards – that the cost of a fully guaranteed pension depends critically upon the rates of return that a pension fund can earn on risky investments even though the pension itself is totally unaffected by these returns. Public-sector accounting practice recognizes, today, the returns that a pension fund might reasonably expect to earn as a reward for future risk taking. These returns are recognized long before the risks are taken and used to reduce the reported cost of employee pensions. As a consequence, the reward for future risk-taking goes to employees who, because their pensions are fully guaranteed, take no risk. Future taxpayers, on the other hand, will be expected to bear risk without fair compensation. Essentially, we have devised a complicated way to transfer wealth from future taxpayers to current plan members.

The good news is that once the accounting problem is recognized for what it is, the solution becomes obvious. The risks that taxpayers are being asked to bear without compensation should be transferred, in whole or in part, to the plan members on whose behalf these risks are being taken. This can be accomplished in a variety of ways. Benefits can be tied to funding levels and/or to the performance of pension funds. Employee contributions and/or salaries can be tied to the cost of funding their pensions. Many provincial governments have already started to move in this direction.

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**Canada's public-sector pension plans are among the best in the world. The pensions are good but not unreasonably so, typically replacing about 50 percent of employment income[1] for long-service employees retiring in their late 50s or early 60s. In this regard, they are similar to the pensions that financial planners recommend to their clients.**

Public-sector employees bear some of their pension costs directly through their contributions and some indirectly through salaries that are less than they otherwise would be. Their public-sector pension plans are generally large, efficient and well managed. Funding levels are healthy when compared to private-sector pension plans in Canada and public-sector pension plans elsewhere. Organizations such as the Ontario Teachers' Pension Plan enjoy well-deserved international reputations for good governance, efficient administration and innovative investment practice.

And yet, all is not well. There are large differences between the fair values of the pensions earned by public-sector employees and the "cost" of these pensions according to public-sector financial statements. These differences arise almost entirely from the pricing of guarantees. Specifically, the financial markets attach high values to the guarantees embedded in public-sector pension plans while government financial statements attach little or no value to these guarantees. This means that pension costs are materially understated and, as a consequence:

- employees in the public sector are paid more than is publicly acknowledged and, in many instances, more than their private-sector counterparts;
- public-sector employees shelter more of their retirement savings from tax than other Canadians are permitted to shelter; and
- taxpayers bear much of the investment risk taken by public-sector pension plans while the reward for risk-taking goes to public employees as higher compensation.

The good news, if there is good news to be found in this *Commentary*, is that once the problem is recognized for what it is, the solution becomes obvious. The risks that taxpayers are being asked to bear without compensation should be transferred, in whole or in part, to the plan members on whose behalf these risks are being taken. This can be accomplished in a variety of ways. Benefits can be tied to funding levels and/or to the performance of pension funds. Employee contributions and/or salaries can be tied to the cost of funding their pensions. Many provincial governments[2] have already started to move in this direction.

Public-sector pension plans come in a variety of shapes and sizes. Generalizations are hazardous.

The author wishes to thank Alexandre Laurin, members of the C.D. Howe Institute's Pension Policy Council and other anonymous reviewers for their comments on earlier versions of this *Commentary*. He also wishes to thank Michael Benedict and James Fleming for their editing. As a partner at Mercer, the author provided advisory services to various private- and public-sector pension plans and served as a member of the Actuarial Standards Board.

1 70 percent when CPP/QPP and OAS pensions are taken into account.

2 Including Alberta, British Columbia, Quebec, Ontario, Saskatchewan and, most recently, New Brunswick.

Unless otherwise indicated, the concepts developed here are relevant for public-sector pension plans that follow the traditional defined-benefit (DB) template where benefits and member contributions are unaffected by the funded status of the pension plan or the performance of the pension fund. These are plans where members are insulated from investment risk. The pension plan covering the federal public service is such a plan and is the source for most of the examples presented in this *Commentary*.

Many of the pension plans found in the provincial public sectors follow a different model. They are jointly sponsored as members are partially responsible for the funding of deficiencies. They are not insulated from investment risk. Some of these plans are migrating toward a "target benefit" model where benefits, not just member contributions, depend on the funded status of the pension plan. This means that retired members, not just those who are actively employed, will be expected to share in the risks of plan sponsorship. The advantages of risk-sharing designs are discussed in Section 6.

This *Commentary* is the first of a two-part series. It establishes the concepts underpinning the fair-value actuarial valuation of government DB pensions – what they really cost – and how these costs should be reflected in employee compensation. The second *Commentary* will apply these concepts to the pension plan for the federal public service.

## 1. What Do Pensions Really Cost?

Suppose a Canadian taxpayer wanted to buy 100 inflation-protected dollars payable in 25 years and wanted the Government of Canada to guarantee the payment. How much would this cost? Our taxpayer would need to buy inflation-protected bonds (commonly called Real Return Bonds, or RRBs) issued by the federal government. At current ***real***[3] interest rates (roughly 1 percent for long term RRBs), the fair market value of the payment would be

$$\$100/(1.01)^{25} = \$78.$$

In other words, the cost of purchasing an RRB that delivers $100, indexed to the increase in the Consumer Price Index (CPI), in 25 years is currently about $78.

Suppose our taxpayer then asked a question that should have the same answer. What does it cost Canadian taxpayers to promise a federal public servant a one-time, inflation-protected $100 pension payment in 25 years? The answer, surprisingly, is that based on public-sector accounting standards the cost is only $37, less than one-half the cost of providing the same benefit to a taxpayer. How, the taxpayer might wonder, can it cost $37 to pay 100 inflation-protected dollars to a public servant when it costs $78 to pay the same amount to a taxpayer?

The answer, if the taxpayer could get an answer, is this. The federal government believes that money contributed to the pension fund maintained for federal public servants and invested in a portfolio of risky assets can reasonably be expected to earn a 4.1 percent real rate of return, not the 1 percent real rate of return guaranteed to purchasers of RRBs. Consequently, the $37 contribution can be expected to grow to

$$\$37 \times (1.041)^{25} = \$100 \text{ (in real terms)}$$

after 25 years. Hence, it costs only $37 to pay the public servant the $100 indexed pension.

But does this make sense? What does it really cost to pay someone 100 inflation-protected dollars in 25 years? Is it the $78 that a taxpayer must spend

3 The interest rate paid over and above the increase in the cost of living as measured by the Consumer Price Index.

to buy a suitable bond or is it the $37 that the federal government believes will deliver the same benefit through its pension plan?

## 2. Private-Sector Accounting Standards and Fair Values

Private-sector accounting standards long ago rejected the premise at the heart of today's public-sector accounting standards – that the cost of a fully guaranteed pension depends upon the rate of return that a pension fund can reasonably be expected to earn on a portfolio of risky investments (Laidler and Robson 2007). Private-sector accounting standards require companies to determine their pension costs and liabilities by discounting future pensions at the yield to maturity on long-term, AA-rated corporate bonds. A promise to pay future pensions is like a promise to pay interest, or to repay the principal, on a bond. The payments do not depend on the corporation's ability to pay. They do not depend on whether or not money is set aside to make the payments. They are not tied to, or influenced by, the rate of return earned on any investments held in a pension fund. The pensions owed are unconditional and fixed. They should be priced as bonds are priced.

If private-sector accounting principles were applied in the public sector, public-sector pension promises would be valued using the yield to maturity on high-quality government bonds.[4] One hundred dollars payable to a bondholder in 25 years would have the same cost as $100 payable to a public servant in 25 years. At current interest rates this cost would be $78, not $37. This is the fair value of the obligation, as can be verified by examining the prices at which bonds trade every day.

### The Liquidity Factor

There is one important difference between the $100 promised to a public servant in 25 years and the $100 promised to a bondholder. While the term (25 years), the inflation protection and the credit risk are similar, if not identical, the bond is more liquid because bonds trade in a secondary market while pensions do not. Therefore, since pensions are less liquid than bonds they are arguably less valuable; i.e., the fair value of an illiquid $100 pension should perhaps be less than the fair value of a liquid, but otherwise similar, $100 bond.

The Canadian Institute of Actuaries, asked to develop a standard governing the lump sums offered to pension plan members who elect to commute their pensions upon termination of employment, decided to add 90 basis points to the relevant Canada bond yield to calculate the commuted value.[5] This adjustment reduces the estimated fair value of an inflation-protected $100 payable in 25 years from $78 to $62 – a material reduction but still 68 percent more than the $37 value assigned by public-sector accounting standards.

Illiquidity may make pensions less valuable to employees but it does not make them less expensive for governments to provide. The liquidity enjoyed by bondholders does not come from bond issuers; it comes from the secondary markets in which the bonds trade. The issuer does not redeem the bonds; they are sold to buyers at whatever price clears the market. Thus, while employees might feel

4 Most corporations are not AA credit risks, yet private-sector accounting standards require all corporations to value pension obligations using AA corporate bond rates, presumably because there are advantages to having a common standard and because pensions are more secure than other debt obligations due to statutory funding requirements. Extending this logic to the public-sector, I have used Canada Bond interest rates to calculate fair values recognizing that, at least for provinces and municipalities, these rates are arguably too low.

5 Standard of Practice 3540 (CIA 2014).

that their pensions are less valuable than bonds because their pensions are less liquid than bonds, governments should not see the pensions as being less costly. Why pay a 90-basis-point illiquidity premium to borrow from employees when one could just as easily borrow from investors and avoid the premium?

In the absence of a real market where pension obligations are bought and sold, fair value need not mean the same thing to plan sponsors as it means to plan members. In our example, the government promising the $100 pension would see the fair value as being $78 while the employee to whom the pension is promised might see the fair value as being only $62. If there were a market where the government could discharge the obligation for $62 or where the employee could sell the pension for $78, the market value would become the accepted fair value. Absent such a market, the parties can disagree about the fair value of pensions with these differences ultimately being resolved in compensation discussions/negotiations.

This complication will be further explored in Section 5.

## 3. Public-sector Accounting Standards

Public-sector accounting standards are based on the actuarial profession's pension-funding practices. Pension costs are viewed from the perspective of an actuary recommending a contribution to the sponsor of a pension plan invested in a globally diversified portfolio of risky investments. The actuary is not interested in the fair value of the pensions promised to members. The actuary would probably concede that the fair value of 100 inflation-protected dollars payable in 25 years is between $62 and $78, but this is simply not relevant in deciding how much to contribute to the pension fund.

The actuary is trying to estimate how much money should be set aside today to deliver 100 inflation-protected dollars in 25 years. The answer depends upon how the money will be invested and on how the investments will perform. In the case of the pension plan covering federal public servants, the actuary estimates that $37 will do the job because the actuary believes that, by investing in risky assets instead of riskless government bonds, the pension fund can reasonably be expected to earn a 4.1 percent real rate of return, not the 1 percent guaranteed on government bonds.

Public- and private-sector accounting standards are fundamentally incompatible. Private-sector accounting standards attempt to estimate and disclose the fair value of the pensions promised to employees. Public-sector accounting standards attempt to estimate and disclose the probable cost of discharging the obligation, not the fair value of the obligation itself. If a promise with a fair value of $78 can probably be discharged by investing $37 in a portfolio of risky investments for 25 years, a government would be expected to tell taxpayers, politicians and public servants that the pension costs $37. In similar circumstances, a corporation would be expected to disclose to shareholders, directors and corporate managers that the pension costs $78.

### The Chief Actuary's View

There is nothing inherently wrong with the actuary's estimate of the amount that should be set aside to fund the $100 obligation. The federal government's Chief Actuary believes that the Public Sector Pension Investment Board[6] (PSPIB) will be able to earn a 4.1 percent real rate of return

6 The federal government created the PSPIB to manage the investments of the pension plans covering federal government employees.

on its investments in the long term.[7] His reasoning is set out in the most recent actuarial report[8] for the Public Service Pension Plan (PSPP). The 4.1 percent real rate of return is reasonable when compared to the past performance of similar portfolios and to the long-term expectations of other pension funds.[9]

An obligation to pay 100 inflation-protected dollars in 25 years can be discharged by

- contributing $37 to a trust fund now and investing in a portfolio expected to earn a 4.1 percent real rate of return for 25 years; and
- agreeing to make up, or recover, any difference between the amount owing at the end of 25 years ($100 indexed to changes in the CPI) and the amount in the trust fund at that time ($37 together with 25 years of accumulated investment returns).

If the government guarantees the $100 payment and sets $37 aside in the pension fund then, using the Chief Actuary's assumptions and the probability distributions most commonly used to model pension plans,[10]

- there is a 50 percent probability that the pension fund will earn less than the 4.1 percent real rate of return and that the government will need to contribute an additional amount ($35 on average) to the pension fund at the end of 25 years;[11] and
- there is a 50 percent probability that the pension fund will earn more than the 4.1 percent real rate of return and that the government will recover a surplus ($77 on average) from the pension fund at the end of 25 years.[12]

## The Fair-Value Impact

The fair value of the obligation to pay 100 inflation-protected dollars in 25 years ($78) must equal the fair value of the contribution ($37) plus the fair value of the guarantee. The fair value of the guarantee, which is the difference between the fair value of any deficiency at the end of 25 years and the fair value of any surplus at the end of 25 years, must therefore be $41 ($78–$37).

The difference between public- and private-sector accounting standards is essentially a

7 The Chief Actuary typically assumes a lower rate of return in the first year following the effective date of the actuarial report. This rate gradually increases to the long-term rate over seven or eight years. I have ignored this complication for two reasons. First, the government appears to use only the long-term rate for financial reporting purposes. Second, since the actuarial report is used to set contributions and expenses years after its effective date, and since the normal cost is little-affected by small adjustments to interest rates in the early years of the projection period, there is little to be gained by complicating the analysis.

8 The report effective March 31, 2011 (OCA 2012).

9 While I would not personally have adopted these assumptions, the Chief Actuary is an experienced and knowledgeable actuary who is entitled to his opinion.

10 Table 55 in Appendix 11 to the actuarial report for the Public Service Pension Plan effective March 31, 2011 (OCA 2012) reveals that the expected ultimate real rate of return for the "Best Estimate Portfolio" is 4.1 percent and that the corresponding annual standard deviation of returns is 12.9 percent. If we assume that the rates of return are log-normally distributed, the logarithm of "1+ the annual return" would be normally distributed with a mean of .0402 and a standard deviation of 0.1234. The median compound average real rate of return for all investment horizons would then be 4.1 percent, as would the expected compound average real rate of return over long investment horizons. For more on the log-normal distribution, go to http://en.wikipedia.org/wiki/Log-normal_distribution.

11 For simplicity, I assume that there will be one large adjustment and that it will take place at the end of the period. In reality, there would be many smaller adjustments during the 25 years.

12 This calculation ignores any complications arising from members claiming to own surpluses even though taxpayers are responsible for deficits.

difference in the value attached to the guarantee. Public-sector accounting standards, by valuing the $100 benefit at $37, attach no value to the guarantee. Private-sector accounting standards, by valuing the $100 benefit at $78, attach a $41 value to the guarantee.

Many find it hard to believe that the fair value of the guarantee ($41) is larger than the $37 contribution reasonably required to fund the obligation. This means that, in some sense, the guarantee is more valuable than the benefit being guaranteed. The value of the guarantee is an unavoidable consequence of assuming that the pension fund can, by choosing risky investments, earn a 4.1 percent real rate of return for 25 years at a time when long-term riskless real interest rates are only 1 percent. The 3.1 percent difference, compounded over 25 years, more than doubles the future value of the amount contributed.[13]

If the price of the guarantee appears unreasonably high it must be because the assumed rate of return on the pension fund appears unreasonably high or because long-term interest rates appear unreasonably low. Both may be true. The Chief Actuary's assumption of a 4.1 percent real rate of return is reasonable when compared to the returns that risky portfolios have earned in the past. However, it may be optimistic for a 25-year period starting at a time when long-term interest rates are as low as they are today (3 percent nominal; 1 percent real).

Meanwhile, today's long-term interest rates may be artificially low as central banks use monetary policy to depress interest rates while investors, living in the shadow of the 2008 financial crisis, buy government bonds at almost any price.

Table 1 shows that long-term real interest rates and the fair value of guaranteeing a 4.1 percent real rate of return for 25 years,[14] have changed significantly since 1994.[15]

## The True Cost of a Guarantee

The cost of guaranteeing a 4.1 percent real rate of return is unusually high today compared to what it was in the 1990s. This may be temporary or enduring, depending on what happens to interest rates in the future. Since Canadian RRBs were first issued in 1991, the long-term real interest rate has been as high as 5.1 percent and as low as 0.3 percent. If we take the middle of this range (2.7 percent) as being, in some sense, typical, then the cost of guaranteeing a 4.1 percent real rate of return for 25 years might typically be about 40 percent of the amount invested. While this is much lower than today's cost of around 100 percent, it is still significant.

One might ask whether the capital markets have properly priced the guarantee. As mentioned earlier, using the Chief Actuary's assumptions and the probability distributions most commonly used to model pension fund returns,

- the probability of earning less than the expected 4.1 percent return over 25 years is 50 percent with an average shortfall[16] of $35; and
- the probability of earning more than the expected 4.1 percent return over 25 years is 50 percent with an average excess of $77.

13 $1.031^{25} > 2$.

14 To guarantee that a $37 investment will accumulate to 100 inflation-protected dollars after 25 years is to guarantee a 4.1 percent real rate of return on the $37 invested.

15 Canadian real return bonds were first issued in December 1991.

16 This is the difference between the expected fund balance ($\$100 \times 1.041^{25}$) and the amount actually accumulated, expressed in real dollars.

**Table 1: The Fair Value of Guaranteeing a 4.1 percent Real Return for 25 years**

| Year | Long-Term RRB Rate on March 31 (*Percent*) | Fair Value of Guaranteeing a 4.1 percent Real Rate of Return for 25 Years, Expressed as a % of the Amount Invested (*Percent*) |
|---|---|---|
| **1994** | 4.05 | 1 |
| **1995** | 4.77 | -15 |
| **1996** | 4.90 | -17 |
| **1997** | 4.25 | -4 |
| **1998** | 4.03 | 2 |
| **1999** | 4.17 | -2 |
| **2000** | 3.80 | 7 |
| **2001** | 3.45 | 17 |
| **2002** | 3.68 | 11 |
| **2003** | 3.08 | 28 |
| **2004** | 2.39 | 51 |
| **2005** | 2.08 | 63 |
| **2006** | 1.59 | 84 |
| **2007** | 1.77 | 76 |
| **2008** | 1.67 | 80 |
| **2009** | 2.00 | 66 |
| **2010** | 1.56 | 85 |
| **2011** | 1.13 | 106 |
| **2012** | 0.52 | 140 |
| **2013** | 0.48 | 142 |

Source: Author's calculations.

Thus, at the end of the 25 years the guarantee's expected cost is negative in the sense that gains and losses are equally likely, but the average gain is more than twice as large as the average loss. In fact, the guarantee is expected to produce a $21[17] profit at the end of 25 years.

So why would the market attach a $41 price to a guarantee that is expected to make money? To this there is no truly satisfying answer. However, there are some things worth pondering.

- The risks are large. The amount required to fund the average shortfall at the end of 25 years averages $35, close to 100 percent of the amount initially contributed. When the fund earns more than the expected 4.1 percent return, the average recoverable surplus is $77, more than double the amount initially contributed.
- The market does not value guarantees in proportion to the expected payoff. The cash received when the plan has a surplus may exceed the cash paid when the plan has a deficit, but cash is received when it is least needed (i.e., when the economy and the capital markets are performing well) while cash must be contributed when it is hardest to find (i.e., when the economy and the capital markets are performing badly). Pension-plan sponsors learned long ago that pension plans become expensive at inconvenient times.
- Finally, some believe that the prices of risky assets are set by traders concerned about short-term volatility and, as a consequence, they are too low when viewed from the perspective of long-term investors. This creates a world where long-term investors, those who are prepared to buy risky assets at attractive prices and wait patiently for their returns, will in the long run be handsomely rewarded. If traders set market prices, long-term guarantees may be irrationally expensive when viewed from the perspective of long-term investors.

To conclude on this point, when long-term interest rates are much lower than the rates of return investors expect to earn on risky assets, pension guarantees become expensive. This may be temporary. It may be unnatural – the consequence of unrealistic return expectations and/or artificially low interest rates. It may be irrational from the perspective of long-term investors who believe that good things come to those who wait. All of these things may be true but none alters the original observation. At the present time, the fair values of pension guarantees are, rightly or wrongly, very high.[18]

## 4. The Case for Changing Public-sector Accounting Standards

Public-sector accounting standards require the sponsors of defined-benefit pension plans to calculate costs and liabilities by discounting future payments at the pension fund's expected long-term rate of return. As mentioned earlier, this means that public-sector accounting standards attach no value to guarantees that have significant fair values.

There are several reasons why public-sector pension accounting standards might differ from private-sector standards.

1. One of the criteria for judging financial statements is comparability to the financial statements of similar entities. This sets the bar for public-sector pension accounting standards at a very low level. In many countries governments simply ignore their pension liabilities and recognize the cost of pensions only when they are paid, not when they are earned. The Government of Canada, to its

17 50% × ($77 – $35).

18 Put another way, many people think that Canadian house prices are unreasonably and unsustainably high but few list their houses for less than fair value; i.e., the price at which similar houses currently sell.

credit, has a long history of attempting to recognize pension costs on an accrual basis although the estimates used for this purpose are questionable.[19]

2. From a financial reporting perspective the selection of a discount rate for pension costs and liabilities may not be terribly important. Returning to the obligation to pay 100 inflation-protected dollars in 25 years, the choice of a discount rate affects the liability initially established and the interest accruing on the liability over 25 years. The impacts of using a 1 percent real discount rate (3 percent nominal if we assume inflation is 2 percent) vs. a 4.1 percent real discount rate (6.1 percent nominal) are summarized in the following table.

| | Discount Rate | |
|---|---|---|
| | **1 percent Real** | **4.1 percent Real** |
| **Initial liability** | $78 | $37 |
| **Interest accruing over 25 years** | $86 | $127 |
| **Total** | **$164** | **$164** |

Either way, the total amount expensed over 25 years equals the amount paid at the end of 25 years, $164 ($100 increased by the assumed 2 percent inflation rate for 25 years). If the 1 percent real discount rate is adopted, more of the cost is recognized at the outset and less accrues as interest in subsequent years. If the 4.1 percent real discount rate is used, less of the cost is recognized at the outset and more accrues as interest in subsequent years.

The users of public-sector financial statements may not care how much of the $164 is expensed up front and how much accrues later as interest. Taxpayers may not care whether the pension debt owed to public servants is characterized as a large debt accruing interest at a low rate or as a small debt accruing interest at a high rate. When all is said and done, $164 is accrued over 25 years and paid after 25 years, regardless of the timing or characterization of the accruals and regardless of the interest rate adopted for financial reporting purposes.

3. While private-sector financial statements have been slowly moving toward a "mark-to-market" standard for pensions, public-sector financial statements have not. Assets and non-pension debts are seldom marked to market in public-sector financial statements. Marking pension obligations to market in a world where long-term interest rates can, and do, move in a wide range introduces a layer of complexity and volatility to public-sector financial statements that is unwelcome, at least to those who prepare the statements.

## The Rationale for Adopting Private-Sector Pension Accounting Principles

There are, however, compelling reasons, some theoretical and some practical, for adopting private-sector pension accounting principles in the public sector.

First, from a theoretical perspective, it is difficult to justify discounting government pensions using a 4.1 percent real discount rate when the corresponding real yield on government bonds is 1 percent. The 3.1 percentage-point difference represents the additional return that the government expects the pension fund to earn as compensation for investment risks that will be taken in the future.

19 A recent estimate of the fair-value of federal pension liabilities puts it at $272 billion, some $120 billion higher than reported in 2013 (Robson and Laurin 2014).

By writing a $78 obligation down to $37, the government is taking advance credit for investment returns that might never be earned as compensation for risks that have not yet been taken. This is not how accounting usually works. Writing a $78 obligation down to $37 creates a $41 windfall for current taxpayers, as they will not be required to pay the fair value of the pensions credited to government employees for services rendered in the current year. This $41 windfall comes at the expense of future taxpayers who will be required to accrue interest on the $37 initial pension liability at a real interest rate of 4.1 percent for 25 years while earning whatever investment returns the pension fund obtains on the $37 contribution. This means that future taxpayers will be expected to bear large investment risks for which they will receive little or no compensation, as interest accrues on the pension obligation at the same rate that the pension fund is expected to earn on its investments.

In this way, public-sector accounting standards create a windfall for current taxpayers at the expense of future taxpayers.

Second, the premise underlying public-sector accounting standards – that the cost of public-sector pensions depends critically on whether the pensions are funded and how the pension fund is invested – is hard to defend. The Government of Canada statutorily guarantees the pensions payable to its employees. The pensions are payable whether the government sets money aside or not, and regardless of how the pension fund performs.

The federal government affirmed this obligation on Feb. 27, 2009, at the depths of the worst financial crisis since the Great Depression. On that date the Treasury Board of Canada Secretariat posted a notice to Public Service Pension Plan members. The notice acknowledged that "funds held and invested in the capital markets have been subject to the same recent return volatility as seen in financial markets globally." The implication for plan members was then described as follows.

> "However, your Public Service pension plan is a defined-benefit plan, a type of registered pension plan that promises members a pension based on salary and years of service. The plan is legislated by the Public Service Superannuation Act (PSSA) and benefits are paid by the Consolidated Revenue Fund (CRF). The Government of Canada continues to hold a statutory obligation for the payment of pension benefits independent of the financial performance of the pension portfolio and is required to fund any shortfalls in the plan."

While federal pensions are unaffected by the plan's funded status, the values placed on the government's statutory obligation by public-sector accounting standards depend critically on funding and investment policies that have no bearing on the benefits employees receive.

In the private-sector, on the other hand, it might make sense to place a higher value on funded pensions because private-sector employers sometimes go bankrupt, and funded pensions are more likely to be paid than unfunded pensions. Ultimately, however, funded public-sector pensions are no more or less secure than unfunded pensions. The federal government can, by amending legislation, refuse to pay pensions that have been funded. Or, faced with bankruptcy at some future date, the federal government could decide to honour unfunded pension obligations by forcing the Bank of Canada to print money for this purpose. In other words, federal pensions will be paid if, and only if, the government chooses to pay them, regardless of whether or not they have been funded.[20]

20 This does not make government pensions more risky than government debt, as governments can default on their debts just as they can default on their pensions.

The third reason for adopting private-sector pension accounting practices is that public-sector practices misinform governments about the cost of pensions and, more importantly, about their options for addressing high costs. Pension costs in the private-sector are measured at market interest rates. Corporations do not control market interest rates. If their pension plans are too expensive, they address the problem by reducing pensions, increasing employee contributions and/or finding savings elsewhere.

In the public sector the easiest way to reduce the apparent cost of a pension plan is to increase the expected rate of return on the pension fund. This can be accomplished in a number of ways, none of which address the real problem. For example, a government can theoretically lower pension costs by:

- finding experts who think that the pension fund will perform better than is currently assumed;
- investing the pension fund more heavily in risky assets with higher expected returns; or
- allowing the pension fund to borrow money and lever its investments, thereby increasing both the risk and the expected return.

The politically attractive options are usually the ones that increase risk in the pursuit of higher returns, not those that increase employee contributions or reduce benefits. This has been happening in practice, if not in Canada, then elsewhere. As interest rates declined and the fair values of pensions increased during the last 15 years, the private-sector cut back benefits, shifted to defined-contribution (DC) pension plans and started to de-risk pension investments. Public-sector pension plans moved in a very different direction, generally preserving their pension plans, failing to significantly reduce their return expectations despite a 300-basis-point-reduction in real interest rates, cutting back their exposures to safe investments, moving aggressively into alternatives and/or leveraging their investment portfolios.

There is one final reason for adopting private-sector accounting principles. Followed to its logical conclusion, the principle at the heart of public-sector accounting standards – that the cost of assuming an obligation is not the fair value of the obligation but the amount that must reasonably be set aside to fund the obligation – could be used to conceal or misrepresent almost any government expense. Suppose, for example, that the federal government wanted to buy something that costs $1 billion. Instead of paying directly the government could borrow $1.89 billion at the prevailing 1 percent real interest rate, use $1 billion to pay for the purchase and invest the remaining $0.89 billion with the PSPIB. The $0.89 billion could then reasonably be expected to grow to $2.43 billion after 25 years ($0.89 billion $\times$ $1.041^{25}$). Since creditors would be owed $2.42 billion after 25 years ($1.89 billion $\times$ $1.01^{25}$), the entire $1.89 billion debt can probably be repaid from the proceeds of the $0.89 billion invested with the PSPIB. Consequently, the $1 billion purchase effectively costs nothing.

A more relevant example might be to ask what it would cost the federal government to guarantee a 4.1 percent real rate of return on the tax-sheltered retirement savings of Canadians who are not employed by the federal government. Suppose the federal government instructed the PSPIB to issue GICs similar to RRBs but bearing a 4.1 percent real interest rate for any Registered Retirement Savings Plan (RRSP) or Registered Pension Plan (RPP) that wanted to buy one. The PSPIB could take the proceeds and invest them exactly as it invests the money in the federal government's pension plans. Upon maturity, any difference between the amount owing to GIC holders and the amount accumulated in the investment fund would be contributed by, or paid to, the federal government. If there is any consistency in public-sector accounting standards, the cost of guaranteeing a 4.1 percent real rate of return to investors should be the same as the cost of guaranteeing a 4.1 percent real rate of return to public servants; i.e., zero.

If the federal government can create institutions like the PSPIB that can, by taking risk, reliably earn a 4.1 percent real rate of return and if it can

borrow from bondholders by paying a 1 percent real rate of interest, then it can make a great deal of money by borrowing, investing and taking risk. To book profits at the outset, before the risks have been taken and the returns have been earned, seems imprudent. To use the profits to reduce the reported cost of employee pensions when the same device could be used to write down any debt-financed expenditure, seems deceptive.

In the real world, guarantees are expensive. Public-sector accounting standards that suggest otherwise mislead taxpayers, politicians and senior public servants about the cost of these guarantees and the cost of the pension plans providing them.

## 5. Pensions as a Compensation Element

Public-sector pensions have always been larger and more expensive than private-sector pensions. There is nothing inherently unfair about this. If one Canadian saves twice as much as another he or she will be able to retire earlier and/or to enjoy a larger retirement income. If the members of public-sector pension plans contribute more to their pension plans than employees in the private-sector and/or receive lower salaries, we should not be surprised that they also receive better pensions.

How can taxpayers confirm that the large differences between public-and private-sector pensions are fully explained by differences in employee pension contributions and salaries? How should pensions be valued in making these determinations? This is the role of compensation management. Every government should periodically review the compensation of its employees, including the value of their pensions and benefits, and satisfy itself that employees are fairly compensated. To pay less would be a disservice to public employees; to pay more would be a disservice to taxpayers.

To measure pension costs for compensation purposes one must first recognize that the sponsor of a defined-benefit pension plan acts in two distinct capacities:

- As the employer of pension plan members the sponsor promises pensions as partial compensation for the services rendered by employees; and
- As the underwriter of the pension promise the sponsor sets money aside and guarantees that the amounts set aside, together with the investment income earned thereon, will accumulate to the amounts necessary to pay the promised pension benefits as and when they fall due. In so doing, the plan sponsor bears investment, longevity, inflation and other risks.

Public-sector pension accounting practice conflates the costs incurred by the plan sponsor acting in these two capacities. Employment costs and underwriting costs are combined, making it difficult to distinguish the cost of promising to pay a pension from the cost of underwriting the promised pension. This is unfortunate because the former should properly be viewed as employee compensation while the latter should not.

This is best explained by example.

Suppose the federal government promises to pay employees $100 inflation-protected in 25 years as part of their pensions. Suppose further that the federal government uses public-sector accounting standards and an assumption that its pension fund will earn a 4.1 percent real rate of return to set employee compensation, to fund the pension plan and to report pension costs, as appears to be the case.[21] Finally, to simplify the analysis suppose that employees do not contribute to the pension plan. The consequences would then be as follows.

- The government contributes $37 to the pension plan.
- The government accrues a $37 pension expense and establishes a $37 pension liability that is fully funded by the $37 pension contribution.

21 This will be demonstrated in the second *Commentary* in this two-part series.

- This $37 expense should be viewed as deferred employee compensation. The government contributes it to the pension plan on behalf of employees and the pension plan uses it to pay employee pensions after 25 years.
- The $37 of pension compensation reduces the amount available for other forms of employee compensation. For simplicity, assume that salaries are $37 less than they would otherwise have been.
- Interest accrues on the $37 initial liability at a nominal rate of 6.1 percent (4.1 percent plus the assumed 2 percent inflation rate). Over 25 years the accrued interest amounts to $127, bringing the total amount accrued to $164, the pension payable at the end of the period ($100 plus inflation).
- Note that the rate of interest used by the government to calculate the cost of the pension plan for compensation-setting purposes becomes the rate of return that employees are effectively guaranteed on their deferred compensation. To turn $37 of deferred compensation into $164 of guaranteed pension after 25 years requires a 4.1 percent real rate of return on the $37.
- The interest accruing on deferred compensation is not usually considered employment compensation – it is effectively compensation for allowing the government to "borrow" $37 of deferred compensation for 25 years. However, this makes sense only if the amounts borrowed earn interest at market rates. Guaranteeing employees rates of return well in excess of market interest rates on their retirement savings is a valuable benefit – one that the Canada Revenue Agency would not tolerate if attempted by a private-sector employer in a defined-contribution pension plan.
- The government expenses any difference between the investment income earned by the pension fund each year and the interest accruing on the pension liability. When the fund earns more than the assumed 4.1 percent real rate of return, the government makes money. When the fund earns less than 4.1 percent, the government loses money. These gains and losses should not be considered part of employee compensation. They are costs incurred, or income earned, by the government as the underwriter of the pension promise, not as the employer of the plan members.

## Public-Sector Accounting Pitfalls

While this may constitute good public-sector accounting in some narrow technical sense, it is bad economics and obscures two significant inequities.

First, employees are guaranteed a 4.1 percent real rate of return for 25 years at a time when other Canadians are guaranteed a 1 percent real return. The fair value of this guarantee, $41, is not recognized in setting employee compensation.

Second, future taxpayers are expected to bear significant investment risks for 25 years without fair compensation. The money in the pension fund may earn more, or less, than the 4.1 percent real rate of return guaranteed to employees. Future taxpayers bear this risk without compensation, as the difference between the real rate of return that the pension fund is expected to earn (4.1 percent) and the real rate of interest guaranteed to plan members (4.1 percent) is zero. The fair value of the burden placed on future taxpayers is $41, as they have foregone the $41 of compensation that the market would normally provide to those who bear these investment risks.

Essentially, we have devised a complicated way to transfer wealth from future taxpayers to current plan members.

## The Fair-Value Approach

Contrast this with the consequences of using fair values to set compensation, to fund the pension plan and to report pension expenses. The 4.1 percent real rate of return used to calculate compensation, contributions and pension expenses then becomes 1 percent, with the following consequences.

- The government contributes $78 to the pension plan.
- The government accrues a $78 pension expense and establishes a $78 pension liability that is fully funded by the $78 pension contribution.
- This $78 should be viewed as employee compensation. The government contributes it to the pension plan on behalf of employees and the

pension plan uses it to pay employee pensions after 25 years.

- The $78 of pension compensation reduces the amount available for other forms of employee compensation. For simplicity, assume that salaries are $78 less than they otherwise would have been.
- Interest accrues on the $78 initial obligation at a nominal rate of 3 percent (1 percent plus the assumed 2 percent inflation rate). Over 25 years the accrued interest amounts to $86, the difference between the $164 payable at the end of the period ($100 plus inflation) and the $78 initially recognized as compensation.
- The rate of interest used by the government to calculate the cost of the pension plan becomes the rate of return that employees are guaranteed on their deferred compensation. To turn $78 of deferred compensation into $164 of guaranteed pensions after 25 years is to guarantee a 1 percent real rate of return on the $78 for 25 years. Plan members earn the same 1 percent real rate of return that other Canadians earn on similar investments.
- The government expenses any difference between the investment income earned by the pension fund each year and the interest accruing on the pension liability. When the fund earns more than a 1 percent real rate of return, the government makes money. When the fund earns less than 1 percent, the government loses money. These gains and losses are costs incurred, or income earned, by the government as the underwriter of the pension promise, not as the employer of the plan members.

This fair-value approach creates neither winners nor losers. Plan members earn the market rate of return on their deferred compensation. Future taxpayers are fairly compensated for the investment risks they bear. Since the pension fund is expected to earn a 4.1 percent real rate of return while employees are credited a 1 percent real rate of return on their deferred compensation, taxpayers in a typical year will receive 3.1 percent of the amount invested as "fair" compensation for bearing the investment risk.

More generally, suppose **A**, **B**, **C** and **F** are defined as follows.

**A** is the amount that employees pay directly (through their contributions) or indirectly (through employer contributions that reduce their salaries) for the pensions they accrue in a particular year; i.e., it is the present value of the pension benefit discounted at the interest rate adopted by the government for compensation management purposes.

**B** is the expense initially accrued by the government for pensions earned by members in the year; i.e., it is the present value of the pension benefit discounted at the interest rate adopted by the government for financial reporting purposes.

**C** is the amount contributed to the pension plan in respect of benefits earned in the year; i.e., it is the present value of the pension benefit discounted at the expected rate of return on the pension fund as determined by the Chief Actuary for pension funding purposes.

**F** is the fair value of the pensions earned during the year; i.e., it is the present value of the pension benefit discounted at the market interest rate.

Then on a fair-value basis

**F minus A** is the immediate gain enjoyed by plan members at the expense of taxpayers.

**B minus A** is the loss immediately suffered by taxpayers if employees pay less for their pensions than the cost of these pensions as recorded on the government's books.

**F minus B** is the loss suffered by taxpayers in future years by being inadequately compensated for the risks they bear.

The only solution that treats everyone fairly is to make **A = B = F**. Using fair values to manage compensation **(A = F)** can eliminate the windfall that members enjoy at the expense of taxpayers, but unless public-sector accounting standards shift to a fair-value basis, **B** will remain less than **F** and current taxpayers will experience an immediate windfall while future taxpayers will be inadequately compensated for the risks they bear.

From a fair-value perspective, it makes no difference whether the pension plan is funded (nothing changes if **C** = 0) and, if it is funded, it makes no difference how the pension fund is invested.

### The Guarantee Problem

If pensions are fully guaranteed by a government, then employees will get their pensions whether or not the pension plan is funded and regardless of how the investments perform. If governments want to try to make money by setting up a fund, investing in risky assets and pocketing the difference between the fund return and the cost of borrowing the money contributed to the fund, they can do so. They can do this with pension money borrowed from employees or with money borrowed from creditors. As long as the cost of borrowing is dictated by market interest rates, taxpayers will be fairly compensated for the risks they bear. But if the cost of borrowing is fixed at rates that exceed market interest rates, taxpayers will be inadequately compensated for the risks they bear.

Finally, let me emphasize that these conclusions do not depend on whether the Chief Actuary or the government have properly estimated the expected long-term rate of return on the pension fund. The inequities arise not because the future rate of return on the pension fund has been improperly estimated but because members should not be guaranteed the rate of return that a pension fund might earn on risky investments.

The federal government uses a 4.1 percent real rate of return to value pensions for financial reporting purposes and to assess the reasonableness of compensation in the federal public sector. By so doing, it collectively guarantees its employees a 4.1 percent real return on the pension they earn each year, and this guarantee, as it relates to the compensation they defer, lasts for the remainder of their lives. The 4.1 percent federally guaranteed real rate of return is, and has been for many years, much higher than the interest rates available to other Canadians who seek guarantees. This constitutes a significant benefit to federal employees, one that is neither acknowledged nor disclosed in financial statements. Clearly, this is a problem.

### Compensation Management

Once employers decide how to measure the cost of pensions and benefits for compensation purposes, they calculate (or should calculate) the "total compensation" of employees as the sum of the costs of each compensation element (cash, pensions, benefits, etc.), both immediate and deferred, less all amounts contributed directly by employees to pension and benefit plans.

The result should be compared to the total compensation of similar employees doing similar jobs in other workplaces to ensure that employees are fairly compensated for their work and that taxpayers pay a fair price for the labour the government employs. In essence, the labour market should determine the total compensation for a particular job. The government and its employees should then decide how to divide this total between cash and benefits, immediate compensation and deferred compensation, guaranteed compensation and contingent compensation, etc.

Seen from this perspective, employees should pay, directly or indirectly, for the pensions they receive as part of their compensation package. They can pay directly through their contributions or indirectly through reduced salaries. How much they pay directly and how much they pay indirectly is of little consequence – only the total matters. The important thing is that the cost of pensions is properly measured for compensation purposes and that the total compensation of public servants is comparable to the total compensation of similar employees in the private-sector. If the cost of pensions is systematically underestimated for compensation purposes, public servants will be systematically overcompensated.

There is one circumstance where the values attached to pensions for compensation purposes are essentially irrelevant. Some occupations (teachers, nurses and police officers, for example) are employed predominantly in the public sector. Their compensation is often set relative to other public-sector employees who participate in similar pension plans. The values placed on pensions in these comparisons are of little consequence as all of the pension values are mis-measured to the same extent. If pensions become very valuable, teachers, nurses and/or police officers are effectively paid more, but their pay remains reasonable when compared to other teachers, other nurses and other police officers even as it drifts away from compensation in the private-sector.

**Fair Values vs. Perceived Values**

Problems arise when the fair value of a pension differs materially from what employees perceive the pension to be worth. Employee decisions will be guided by their assessment of their compensation package relative to those offered by other employers, not by the fair values determined by their employer.

Returning to our example, falling interest rates have increased the fair value of a $100 inflation-protected pension payable in 25 years from $37 to $78. But no one has communicated this to employees.[22] It may not be easy to persuade employees that their pensions have suddenly increased in value and that, as a consequence, they are materially overpaid. Employees and the unions who represent them might not believe that pensions are worth what markets say they are worth and, from an employee perspective, they might be right.

If defined-benefit pensions are priced using government bond interest rates in setting employee compensation, government employees will earn government-bond interest rates on their retirement savings. This is not how private-sector employees with DC pension plans choose to invest their retirement savings. Few choose to avoid risk entirely. Most prefer balanced portfolios where they take some risk in exchange for potentially higher returns and potentially better pensions in the long term.

An employer contributing 10 percent of pay to a DC pension plan that forces employees to fully invest in government bonds would find that employees are dissatisfied with the plan. The pension plan would obviously cost the employer 10 percent of pay but it would not be worth 10 percent of pay to employees. From the employees' perspective, the fair value of the plan would be less than the fair value the employer attaches to it. This is not a failure of employers or employees to properly understand fair value. It is a legitimate difference in their perspectives.

Economists have long appreciated that employees should logically and rationally prefer a DC pension plan that allows them to make investment decisions to one that forces them to earn riskless returns on riskless investments. The Certainty Equivalent Interest Rate is the interest rate that a DC pension plan would need to guarantee employees to persuade them that the plan is as valuable as a plan where employees choose their own investments. Some research suggests that the Certainty Equivalent Interest Rate might reasonably exceed the riskless rate by about 1.25 percentage points.[23] If this is accurate, a DC plan where employee balances earn 1.25 percent more per annum than government-bond interest rates has, from an employee perspective, a fair value equal to that of a plan where employees make their own investment choices.

22 This is not surprising, as public-sector accounting standards encourage public-sector employers to believe that nothing of consequence has changed.

23 See, for example, Munnell (2012) at page 151 and the papers referenced therein.

For DB pension plans the implications are troubling. The interest rate used to value pensions for compensation purposes is both the rate that employees will collectively earn and the rate that the employer will effectively pay on the compensation deferred by employees in exchange for their guaranteed pensions. To treat the employer fairly, this interest rate should be the rate at which the employer can borrow. To treat employees fairly, this interest rate should be the Certainty Equivalent Interest Rate that, in the case of a public-sector pension plan, may be 1.25 percentage points higher than the rate at which the employer can borrow.

Since the present values of pensions are notoriously interest-rate sensitive, employees might reasonably attach fair values to DB pensions that are 25 percent less than the fair values that employers attach to the same benefits. How do such differences get resolved?

Suppose that an employer offers a benefit that has a fair value equal to 20 percent of pay from the employer's perspective and a fair value equal to 15 percent from the employees' perspective. In an efficient labour market, the employee value would prevail. To retain a productive workforce the employer would ultimately be forced to offer a compensation package that costs more than the compensation packages of employers who do not force employees to take benefits that cost more than employees think they are worth.

From the perspective of shareholders and/or taxpayers, it is unwise for employers to offer benefits that cost more than employees think they are worth. This is a problem for defined-benefit pension plans in the public and private-sectors. Public-sector employers have been able to ignore the problem largely because public-sector accounting standards encourage them to underestimate the cost of their pensions and because governments, unlike most private-sector employers, can afford to over-compensate employees even if they should not.

### Volatility

The fair values of public-sector pensions are sensitive to changes in long-term real interest rates. These have moved in a wide range during the last 20 years, dragging the fair values of pensions up and down as they go. This is undeniably inconvenient for those trying to manage compensation, particularly if employees do not understand how interest rates affect pension values and react badly to reductions in salaries and/or increases in employee contribution rates as interest rates move down.

While it may be impractical to adjust salaries and/or employee contribution rates as the fair value of pensions fluctuates, the alternative seemingly preferred by the federal government – to ignore a significant decline in interest rates in the hopes that rates will someday return to their former levels – would be hard to justify to taxpayers if they were properly informed.

It has been more than a decade since the capital markets priced pensions at the levels assumed by the federal government for compensation purposes. The consequence has been a material, persistent and continuing overcompensation of federal public servants, with no end in sight.[24]

## 6. Risk Sharing and Fair Values

Since the fair value of a pension depends critically on the cost of guarantees, it is important to understand how risk is divided between employees and employers in public-sector pension plans.

Returning to our example, recall that if a pension plan promises to pay an employee $100, plus indexing, in 25 years, the fair value of the pension is $78 even though, using the federal government's

24 This point is the focus of the second part of this two-part *Commentary* series.

long-term assumptions, a $37 contribution can reasonably be expected to fund the obligation.

Assume that the employee contributes $18.50 to the pension plan, 50 percent of the current service cost. For compensation measurement purposes, what is the value of the pension?

- As measured by the federal government using public-sector accounting standards, the value is

  $37.00 – $18.50 = $18.50.

- Measured at fair value, the value is

  $78.00 – $18.50 = $59.50.

Suppose the pension plan became a Jointly Sponsored Pension Plan (JSPP) with a 50/50 sharing of cost and risk, as is the case for many pension plans in the provincial public sectors. Employees would still pay 50 percent of the $37 contribution, but now they would be responsible for 50 percent of the risk. Employees would be collectively responsible for 50 percent of any deficits and would collectively "own" 50 percent of any surpluses. Structured as a JSPP the cost of the pension plan would then be:

- as measured by the federal government,

  $37.00 – $18.50 = $18.50; or

- measured at fair value,

  50% × $78 = $39.[25]

Thus, changing from a traditional defined-benefit pension plan to a JSPP has no impact on the cost as measured by the federal government but a significant impact on the cost measured at fair value (reducing it from $59.50 to $39, a 34 percent reduction with no change in the expected benefit or in the expected employee contribution). The $20.50 reduction in fair value is attributable to the reduction in the cost of the guarantee (50% × [$78 – $37]).

### Target-Benefit Plans

Continuing in this direction, suppose now that the pension plan was converted to a target-benefit plan by changing the $100 benefit from a guarantee to a target. In a target-benefit plan, the benefit is whatever can be supported by the amounts contributed to the pension plan and by the investment earnings thereon. Employees would contribute $18.50; the federal government would contribute $18.50; the PSPIB would hold and invest the $37 contribution for 25 years.

If the pension fund earns the expected 4.1 percent real rate of return, members would collect the $100 (plus inflation) target benefit. If the pension fund does better or worse, the benefit payable, not the amounts contributed to the pension plan, would be adjusted. With a target benefit plan there is no pension guarantee – the pension is whatever the contribution can support and the fair value of the pension is the amount contributed to the pension plan. The cost of the target-benefit plan for compensation purposes would then be:

- as measured by the federal government,

  $37.00 – $18.50 = $18.50; and

- as measured at fair value,

  $37.00 – $18.50 = $18.50.

Thus, if the federal government's pension plans were to be converted to target-benefit pension plans, the funding contributions calculated by

25 Since employees are collectively responsible for one-half of the cost and one-half of the risk, taxpayers are only responsible for the fair value of the other half.

the Chief Actuary and the amounts used by the federal government for financial disclosure and compensation-setting purposes would coincide with fair values. In essence, by attaching no value to the guarantees provided by traditional defined-benefit pension plans, the federal government has set employee compensation as if its employees were participating in target-benefit plans, not traditional defined-benefit pension plans.

When pensions are valued at fair value and properly reflected in compensation, employees may well prefer target-benefit plans to traditional defined-benefit plans. Measured at fair value, a $100 target benefit funded by a $37 contribution costs $37. A $100 defined benefit costs $78. If there is no link between pensions and other compensation, employees will naturally prefer the more valuable defined benefit. If there is a link, but the defined benefit is erroneously thought to be worth $37 in accordance with public-sector accounting standards, employees will prefer the mispriced defined benefit to the similarly priced, but less valuable, target benefit. Finally, if there is a link between pensions and other compensation and pensions are valued at fair value, employees may prefer to sacrifice $37 of direct compensation for the target benefit rather than sacrificing $78 for the defined benefit or $57.50 for the defined benefit delivered through a JSPP.

## 7. Conclusion

The problems with public-sector pensions are not in the benefit design or the way in which the plans are governed, funded, invested or administered. The problems are one of cost measurement, compensation management and risk allocation.

By following public-sector accounting standards that are incompatible with private-sector accounting standards and attach no value to the guarantees embedded in defined-benefit pension plans, governments have priced their defined-benefit pension plans as if they were target-benefit pension plans. Consequently, governments have seriously under-estimated the economic cost of the pensions they have promised to their employees.

If public-sector pensions had been valued at fair value and properly reflected in compensation, the rising cost of public-sector pensions as interest rates declined during the last 15 years would have triggered a thoughtful reconsideration of the guarantees contained in public-sector pension plans. To some extent this happened in jointly sponsored pension plans where employees collectively co-sponsor the pension plan and (typically) bear one-half of the risk. In other public-sector pension plans the process has hardly begun.

The second in this two-part series will examine the Pension Plan for the Public Service of Canada from a fair-value perspective. It shows how inappropriate cost measures lead to erroneous conclusions about the cost of pensions, the level of compensation and the size of the tax-sheltered retirement savings opportunities enjoyed by federal employees. The *Commentary* then identifies practices that need to change if we are to level the playing field between the federal public service and other Canadians.

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