Risk and Reward in Public Sector Pension Plans

A Taxpayer's Perspective

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Executive Summary

The most striking feature of Canada's retirement system is arguably the large and growing gap between pensions in the public and private sectors. Eighty percent of public sector workers participate in defined benefit (DB) pension plans. Only ten percent of private sector workers can make the same claim.

With the collapse of interest rates in the early 2000s, DB plans became prohibitively expensive in the private sector, yet they flourished in the public sector. If private sector employers can no longer afford even modest DB plans, how can public sector employers afford much more expensive plans—plans with larger pensions, earlier retirement, and full inflation protection?

Canada's public sector DB plans frequently attribute their success to the "Canadian Pension Model." A recent World Bank study identifies superior governance, economies of scale, innovative investment practice, responsible funding, and visionary leadership as important features of this model.

Without disputing the virtues of the Canadian Pension Model, we attribute the success of Canada's public sector DB plans to large public subsidies made possible by practices that are neither admirable nor virtuous: bad accounting, poor governance, imprudent risk taking, and inadequate financial disclosure. Responsibility for these failings lies not with the pension boards who administer the plans but with the employers who sponsor them. These employers, usually governments, fail to represent the public interest when it conflicts with the interests of their employees.

The narrative advanced by Canada's public sector DB plans raises a perplexing question. If innovative investment strategies abetted by good governance explain their success, why don't private sector employers adopt the Canadian Pension Model and provide comparable pensions to their employees? Our answer is that Canada's public sector DB plans do things that private sector DB plans are prevented from doing for good reason. In particular, public sector accounting standards allow public sector employers to materially misrepresent the cost of their pension plans. Private sector employers are prevented by private sector accounting standards from doing the same thing.

Taking investment risk is a legitimate tactic provided that those who bear the risk also reap the reward. This is not what happens in Canada's public sector DB plans. Consider the plans covering employees of the federal government. Plan members, whose interests are ably represented by powerful public sector unions, are handsomely rewarded for investment risk taken by their pension plans and borne by the public. The public, whose interests are poorly represented by the federal government, receives no reward for bearing this risk.

Public sector DB plans cite their independence from government as a key to their success. We argue that this independence is a flaw, not a virtue, of public sector pension governance. The plans take investment risk to advance the interests of plan members while the interests of taxpayers, who ultimately bear this risk, are ignored. These practices are best described as moral hazard, not good governance.

This paper questions whether Canada's public sector pension plans have discovered a formula that makes them a model for the world to emulate. The exceptional feature of Canada's public sector DB plans is not "world-beating" investment strategies or good governance. It is the ability to enrich public employees by shifting large, undisclosed investment risks to taxpayers without fair compensation. By our estimate, this provides an unacknowledged $22 billion annual subsidy to Canada's public sector DB plans and, ultimately, to the members of these plans. This large public subsidy, not the virtues of the Canadian Pension Model, explains the plans' success. Without it, public sector DB plans would be no more viable than private sector DB plans.

"You cannot explain something to people whose jobs depend on their not understanding it."

*—With apologies to Upton Sinclair**

*He actually wrote "It is difficult to get a man to understand something when his salary depends on his not understanding it."

Introduction

The large and growing gap between public and private sector pensions is arguably the most striking feature of Canada's retirement system. Defined benefit (DB) pensions, the most sought-after and valuable workplace pensions, are now found almost exclusively in the public sector. Eighty percent of public sector workers participate in DB pension plans. Only ten percent of private sector workers can make the same claim.

The demise of private sector DB plans has been neither sudden nor surprising. Participation rates peaked in the 1980s. With the collapse of interest rates in the early 2000s, DB plans became prohibitively expensive. They now cost more than most private sector employers are prepared to pay and more than most private sector workers believe they are worth. DB pension plans are not economically viable in a low interest rate environment. They have no place in a well-designed compensation package.[1]

The mystery is not why DB plans have disappeared in the private sector; it is how they have flourished in the public sector. If private sector employers can no longer afford even modest DB plans, how can public sector employers afford much more expensive plans—plans with larger pensions, earlier retirement, and full inflation protection?

Canada's public sector DB plans frequently attribute their success to the "Canadian Pension Model"—the manner in which they are organized, governed, administered, funded, and invested. A recent World Bank study attributes the success of the Canadian Pension Model to superior governance, economies of scale, innovative investment practice, responsible funding, visionary leadership, high pay, and other virtues too numerous to mention.[2]

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[1] Benefits that cost more than employees believe they are worth make poor compensation elements.

[2] This paper will use the 2017 World Bank study *The Evolution of the Canadian Pension Model* as the articulation of the virtues of this model. The study was a collaboration between the World Bank and the five Canadian organizations who helped finance it: the Alberta Investment Management Corporation, the Caisse de depot et de placement du Quebec, the Healthcare of Ontario Pension Plan, OPTrust, and the Government of Ontario.

Canada's public sector DB plans have done a superb job for their members. The plans are capably and efficiently administered by boards operating at arm's length from government. These boards faithfully represent the interests of plan members. They collect contributions, maintain records, pay pensions, and manage investments. Their practices, as described in the World Bank study, are exemplary.

Canada's public sector DB plans deliver extraordinary pensions at an affordable price. They are well funded. Their investments perform well relative to other pension plans and relative to the benchmarks they set for themselves. They operate efficiently by exploiting economies of scale. Most importantly, they enjoy the confidence and support of their members.

Without disputing any of these observations, we challenge the conclusion that Canada's public sector DB plans appear to have reached—that their success is attributable to the virtues of the Canadian Pension Model. Rather, we attribute their success to large public subsidies made possible by practices that are neither admirable nor virtuous: bad accounting, poor governance, imprudent risk taking, and inadequate financial disclosure.

To be fair, the responsibility for many of these failings lies not with the pension boards who administer the plans but with the employers who sponsor them. The missions, mandates, and powers of pension boards are typically the work of plan sponsors. The boards operate within well-defined constraints. They are not the cause of, nor are they the solution for, the problems we identify. The fault lies with public sector employers, usually governments, who fail to represent the public interest when it conflicts with the interests of their employees.

This does not mean that our pension boards are entirely without blame. They have become enablers of, and enthusiastic cheerleaders for, a badly flawed pension system. They have grown comfortable with a success they do not understand.

The narrative advanced by Canada's public sector DB plans raises a perplexing question. If innovative investment strategies abetted by good governance explain their success, why don't private sector employers adopt the Canadian Pension Model and provide comparable pensions to their employees? Our answer is that Canada's public sector DB plans do things that private sector DB plans are prevented from doing for good reason. In particular, public sector accounting standards allow public sector employers to materially misrepresent the cost of their pension plans by ignoring the significant contribution made by those who bear investment risk.[3] Private sector employers are prevented by private sector accounting standards from doing the same thing.

[3] Pension plans are exposed to many risks. This paper focuses almost exclusively on investment risk for three reasons. First, the investment risk is the largest risk. Second,

Taking investment risk is a legitimate tactic provided that those who bear the risk also reap the reward. This is not what happens in Canada's public sector DB plans. Consider the plans covering employees of the federal government. Plan members, whose interests are ably represented by powerful public sector unions, are handsomely rewarded for investment risk taken by their pension plans and borne by the public. The public, whose interests are poorly represented by the federal government, receives no reward for bearing this risk. To be clear, public sector accounting standards permit, but do not require, the deceptive accounting practices that make this possible. Governments are allowed to properly account for pension costs; they simply choose not to do so. By making this choice they subordinate the public interest to the interests of their employees.

Public sector DB plans cite their independence from government as a key to their success, freeing them to pursue profitable policies outside the purview of politics (World Bank, 2017). We argue that this independence is a flaw, not a virtue, of public sector pension governance. The plans take investment risk to advance the interests of plan members while the interests of taxpayers, who ultimately bear this risk, are ignored. Outside the public sector this would usually be called moral hazard, not good governance.

This paper questions the assertion that Canada's public sector pension plans have discovered a formula that makes them a model for the world to emulate. The exceptional feature of Canada's public sector DB plans is not "world-beating" investment strategies or good governance. It is the ability to enrich public employees by shifting large, undisclosed investment risks to taxpayers without fair compensation. By our estimate, this provides an unacknowledged $22 billion annual subsidy to Canada's public sector DB plans and, ultimately, to the members of these plans. This large public subsidy, not the virtues of the Canadian Pension Model, explains the plans' success. Without it, public sector DB plans would be no more viable than private sector DB plans.

investment risk can be diversified but, once diversified, it cannot be further reduced by pooling as can many of the other risks to which pension funds are exposed. Third, investments trade in public or private markets; those who bear investment risk can reasonably expect to be rewarded with higher returns. It is not clear that those who bear other risks, say longevity risk, can expect a financial reward for doing so.

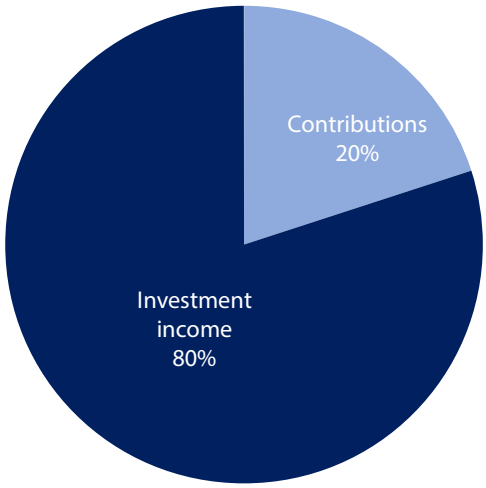
How We Pay for Pensions

How do DB pension plans generate the funds needed to pay pensions?

The administrators of Canada's public sector DB plans believe that the plans are largely self-financed. Most tell a version of the story depicted in Figure 1. As this story goes, public sector DB plans are a bargain because contributors cover only 20% of the cost. Investment income covers the other 80%. Consequently, those who manage pension funds and generate the investment income do the heavy lifting. Contributors are largely along for the ride. Unsurprisingly, this story has an irresistible appeal to those who manage pension funds. It is told at every opportunity.

What is wrong with this picture? Pension contributions[4] are made when pensions are earned. Pensions are paid about 30 years later, after the employees retire. Comparing today's contributions to tomorrow's pensions without adjusting for inflation or interest is deceptive.

Figure 1: How public sector plans think pensions are funded



[4] In this paper, pension contributions refer to current service contributions—the amounts contributed in a year to fund the pensions earned in that year—unless the context requires a different interpretation.

For example, if a Canadian contributes $1 to an RRSP and earns a 5.5% annual return for 30 years, he or she can withdraw $5 from the RRSP. Eighty percent of this $5 comes from the accumulated investment income. This does not mean that someone other than the contributor is responsible for 80% of the RRSP balance nor does it mean that something magical happened in the RRSP to gradually transform $1 into $5. It does not even mean that the saver earned a particularly good rate of return. It simply means that people are easily surprised by the power of compound interest.

Pension plans take investment risk to improve their returns, thereby decreasing contribution rates (see **Sidebar 1**). Consider a pension plan[5] in a world with 2% inflation, 1% real wage growth and a 1% real yield on government bonds.[6] Suppose the pension fund can earn an additional 2.5% return by taking investment risk, bringing the total real return to 3.5%.[7]

What contribution rate is needed to support this pension plan and how does this contribution rate depend on the pension fund's investments?

	Required contribution rate (as a % of pay)
Pension Fund invests in government bonds earning a 1% real return	43%
Pension Fund invests in a mix of stocks and bonds earning a 3.5% real return	21%[a]

[a] In this example, the pensions paid to retired employees during their retirement total 103% of the salaries they earn during their working lives. Consequently the 21% contribution rate produces contributions that cover 21% ÷ 1.03 = 20% of their pensions, consistent with Figure 1.

In this example neither the arithmetic nor the assumed rates of return are controversial. The controversy is in the interpretation of the numbers. What do they mean?

[5] The pension plan in question delivers CPI-indexed pensions equal to 50% of final earnings. We assume that employees are hired at 30, retire at 60 and die at 90.

[6] The real yield on long term Real Return Canada Bonds (RRBs) has averaged slightly less than 1% during the last 10 years.

[7] This 3.5% real return is representative of the rates of return used to set contribution rates for public sector DB plans. Individual plans may be as low as 2.75% or as high as 4.25%.

Sidebar #1 – Taking and Bearing Investment Risk in DB Pension Plans

Taking investment risk is something that a pension board does to increase the expected rate of return on the pension fund, thereby reducing contribution rates.

The *reward for risk taking* is determined by the plan actuary and distributed to contributors as a reduction in their contribution rates. The plan actuary anticipates the additional returns that the pension fund will earn *over the remaining lifetime of plan members*. The actuary estimates by how much contribution rates can be reduced as a consequence. Contributors pay this lower rate immediately. This means that the reward for risk taking, as estimated by the actuary, is typically distributed about 20 to 25 years before the risks are actually taken.

The risks materialize when they are taken. Suppose that the actuary believes that the pension fund can earn a 3.5% real rate of return following the investment policies adopted by the pension board. If the pension fund fails to earn the 3.5% real return used to set contribution rates, the pension plan will not have enough money to pay the pensions. Pension plans have procedures for addressing the investment gains and losses that inevitably arise when investments earn more or less than the actuary assumed. Otherwise they would not survive the ups and downs of financial markets.

Bearing investment risk is something that employees, employers and/or pensioners do by accepting adjustments to their contributions, or to their pensions, when the investments perform better or worse than expected. These risks are typically borne gradually during the 20 years following the taking of the risk. This means that investment risks are typically borne by the generation following the one rewarded for taking the risk.

In an individual savings plan, the saver decides how much risk to take, takes the risk, bears the risk and lives with the consequences. The saver may lack the education, training, experience and temperament to do the job properly but the process is commendably straightforward.

In a DB pension plan the presumed reward for risk taking is distributed long before the risks are taken and the risks are borne long after they are taken. The party deciding to take the risk (the pension board) is not the party rewarded for taking the risk (the contributors). The party rewarded for taking the risk is usually not the party bearing the risk (the employer). DB plans can be used to transfer risk and reward, equitably or inequitably, from employees to employers. They can be used to transfer risk and reward within or across generations. These capabilities can be used responsibly or irresponsibly.

It is important to note that the risk in question is the risk that the pension fund fails to earn, for any reason, the rate of return that the actuary uses to set contribution rates. The reasons might be any or all of the following:

- the investments fail to perform as expected, or
- the investment risks taken by the plan differ from the risks that the actuary was expecting the plan to take due to changes in investment policy, or
- the actuary's estimate of the expected return on the pension fund is unreasonable at the time it is made, either deliberately or inadvertently.

Whatever the reason, those who bear the investment risk must pick up any shortfall.

The public sector[8] believes that taking investment risk increases the expected real rate of return on the pension fund (from 1% to 3.5% in our example), thereby reducing the cost of the pension plan (from 43% of pay to 21% of pay in our example). The public sector does not distinguish the cost of a pension plan from the contribution rate required to support the pension plan. Consequently, the public sector believes that taking investment risk reduces the cost of the pension plan in our example by close to 50%.

In our view the correct interpretation of these numbers is very different. The cost of the pension plan is 43% of pay—the contribution rate required to support the plan without taking investment risk. It is 43% of pay no matter how the pension fund invests the contributions. Taking investment risk and increasing the expected real rate of return on the pension fund from 1% to 3.5% reduces the contribution rate required to support the plan, not the cost of the plan, from 43% of pay to 21% of pay. The 21% contribution rate does not cover the full cost of the pension plan. Without taking investment risk, the pension fund will earn a 1% real return and the 21% contribution rate will cover only 49% (21% ÷ 43%) of the cost of the pension plan. The remaining cost, 51% of the total, is covered by the additional 2.5% return attributable to risk taking. This portion of the cost is borne by those who bear the investment risk (the risk bearers), not by those who contribute. The risk bearers' "contribution" to the pension plan is worth 22% of pay (43% – 21%), i.e., it is the additional contribution that would have been required had no one been willing to bear investment risk.

To summarize, Canada's public sector believes that taking investment risk reduces the cost of a pension plan. The better interpretation, in our view, is that taking investment risk does not reduce the cost of the pension plan; it simply shifts some of the cost from contributors to risk bearers.

We can convert **Figure 1** into something useful by dividing the investment income into two parts.

- The first is the investment income that the pension fund can earn without taking investment risk, say by investing in long term government bonds. This covers 28% of the pensions (i.e. the 1% real rate of return earned on the 21% contribution rate in our example covers 49% of the pensions).[9]
- The second is the additional investment income that the pension fund can reasonably expect to earn by taking risk, say by investing some of the money in common stock or real estate, i.e., the anticipated reward for risk taking. This covers 51% of the pensions.

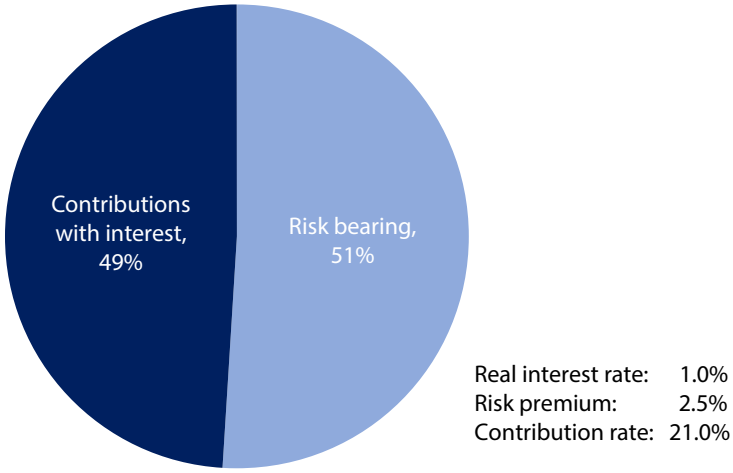
[8] When we say that the public sector believes something, we mean that public sector employers, unions, and pension plans act in accordance with these beliefs.

[9] Authors' calculation, as are the other numbers shown in this paper.

Table 1: Pension Cost Attribution for Different Riskless Rates and Risk Premiums

Investment Return Attribution			Pension Attribution			Pension Cost Attribution (% of Pay)		
Real Riskless Rate (1)	Risk Premium (2)	Real Return (3) = (1) + (2)	Contributors (4)	Risk Bearers (5)	Total (6) = (4) + (5)	Contributors (7) = (4) x (9)	Risk Bearers (8) = (5) x (9)	Total (9)
0%	0.0%	0.0%	100%	0%	100%	58%	0%	58%
	1.0%	1.0%	75%	25%	100%	43%	15%	58%
	2.0%	2.0%	56%	44%	100%	32%	25%	58%
	3.0%	3.0%	42%	58%	100%	24%	33%	58%
	4.0%	4.0%	32%	68%	100%	18%	39%	58%
1%	0.0%	1.0%	100%	0%	100%	43%	0%	43%
	1.0%	2.0%	75%	25%	100%	32%	11%	43%
	2.0%	3.0%	56%	44%	100%	24%	19%	43%
	3.0%	4.0%	42%	58%	100%	18%	25%	43%
	4.0%	5.0%	32%	68%	100%	14%	29%	43%
2%	0.0%	2.0%	100%	0%	100%	32%	0%	32%
	1.0%	3.0%	75%	25%	100%	24%	8%	32%
	2.0%	4.0%	57%	43%	100%	18%	14%	32%
	3.0%	5.0%	43%	57%	100%	14%	19%	32%
	4.0%	6.0%	32%	68%	100%	10%	22%	32%
3%	0.0%	3.0%	100%	0%	100%	24%	0%	24%
	1.0%	4.0%	75%	25%	100%	18%	6%	24%
	2.0%	5.0%	57%	43%	100%	14%	10%	24%
	3.0%	6.0%	43%	57%	100%	10%	14%	24%
	4.0%	7.0%	33%	67%	100%	8%	16%	24%
4%	0.0%	4.0%	100%	0%	100%	18%	0%	18%
	1.0%	5.0%	76%	24%	100%	14%	4%	18%
	2.0%	6.0%	57%	43%	100%	10%	8%	18%
	3.0%	7.0%	43%	57%	100%	8%	10%	18%
	4.0%	8.0%	33%	67%	100%	6%	12%	18%

Figure 2: How we actually pay for public sector pensions



These changes transform Figure 1 into a pie chart that is genuinely useful (Figure 2).

With interest rates at very low levels, public sector pension plans rely heavily on risk-taking to pay for pensions. Figure 2 tells us that contributions with interest now cover only half of the cost of the pension plan. Risk bearing covers the other half (**see Sidebar 2**).

Table 1 shows how sensitive Figure 2 is to the most important inputs: the riskless interest rate (1% in Figure 2) and the risk premium (2.5% in Figure 2).

Table 1 has three groups of three columns.

- The first group includes the real rate of return on investment (column 3), which equals the sum of the riskless interest rate (column 1) and the risk premium (column 2).
- The second group corresponds to the pie chart in Figure 2—the total cost of the pension plan (the total by definition being 100%) is divided between contributors (column 4) and risk bearers (column 5) as it was in Figure 2.
- The third group includes the cost of the pension as a percentage of pay (column 9) (i.e., the contribution rate required to support the plan if the pension fund earns the riskless interest rate in column 1) and how this should be attributed to contributors (column 7) and risk bearers (column 8).

The results are organized in 5 blocks of 5 rows. The blocks correspond to real interest rates between 0% and 4% inclusive, in increments of

Sidebar #2 – Pricing Risk Transfers in DB Pension Plans

Suppose that the contribution rate required to support a pension plan is 40% of pay if the pension fund invests in government bonds earning a 1% real return and 20% of pay if the pension fund invests in a mix of stocks and bonds earning a 3.5% real return.

By taking investment risk and increasing the rate of return on the pension fund by 2.5%, the pension board can cut the contribution rate in half, from 40% of pay to 20% of pay. People are often surprised by the size of the reduction and by the power of compound interest. One dollar earning a 2.5% return for 30 years becomes two dollars. Increasing the rate of return on a pension fund by 2.5% per annum doubles the amounts available to pay pensions. In a savings plan, this doubles the benefits. In a DB pension plan, it halves the contribution rate.

In a traditional DB pension plan, employees contribute (both directly and indirectly, as will be addressed in the next section) and collect pensions. The employer bears the investment risk. This means that, absent some special intervention, the reward for risk taking (20% of pay) goes to employees by reducing the amount they pay for their pensions. The employer, who bears all of the investment risk, receives no reward. This conclusion is the product of two observations.

1. The real yield on government bonds has averaged 1% for 10 years.
2. Public sector DB plans typically use a 3.5% real return to set contribution rates.

The rest is arithmetic.

Governments and public sector unions believe that the investment risks taken by pension plans are too large for members to collectively bear yet these same risks, when borne by taxpayers, are too inconsequential to merit compensation. The public sector believes that governments, being large, can simply ignore and conceal investment risk until it disappears.

If public sector employees believe that 20% of pay is too high a price to pay for having taxpayers bear the investment risks taken by their pension plans, there is a sensible alternative. Employees can collectively bear the risk themselves and keep the 20%. If, on the other hand, they believe that the risk is too large for plan members to bear, they should pay taxpayers a fair price for bearing it on behalf of members. This fair price is 20% of pay. It is fair because it is the amount by which contributions are reduced due to risks borne by taxpayers. It is fair because it is the additional amount that members would pay for their pensions if the pension board decided to invest only in government bonds earning a 1% real return, thereby relieving both plan members and taxpayers of the burden of bearing investment risk.

1%.[10] Within each block there are risk premiums that increase from 0% to 4% inclusive, in increments of 1%.[11]

In the 1990s real interest rates were between 4% and 5%. During the last 10 years they have averaged less than 1%. During the last 5 years they have averaged close to 0.5%. The cost of a pension plan increases sharply (column 9) as real interest rates move from the bottom of Table 1 to the top. *For any given level of risk premium,* the cost allocated to contributors, as measured by column 7, soars as well. However, public sector DB plans have an alternative to high contribution rates. They can increase their risk premiums to compensate for the reduction in interest rates. At first this was easy—most plans used conservative actuarial assumptions in the 1990s. Risk premiums that were unrealistically low were slowly increased until they became reasonable and then until they became optimistic. As the level of optimism became harder to defend, some plans started to dial up their investment risk by plunging into private markets or leveraging their public investments. Some were quite open about this, amending their investment policies to make it clear that they would take however much risk was required to earn the rate of return that the plan actuary said was needed to avoid increasing contribution rates.[12] For many pension plans, risk taking became the preferred option for controlling contribution rates.

Unfortunately, increasing risk does not reduce the cost of a pension plan, properly measured. Look at columns 4 and 5 in Table 1. If the real interest rate is 1%, increasing the risk premium just shifts cost from contributors to those who bear the risk. As will be demonstrated in the next section, in a public sector pension plan the plan members directly or indirectly pay the contributions while most of the investment risk is borne by the public. Consequently, the risk-seeking strategies adopted by public sector DB plans did not control their cost. They simply shifted more and more of the cost from plan members to the Canadian public.

Contributing and bearing investment risk are best viewed as substitutes. By changing investment policies and/or by manipulating actuarial assumptions, public sector DB plans can shift costs from contributors to

[10] Canada has experienced real interest rates between 0% and 5% since real return bonds (RRBs) were introduced in 1991.

[11] The risk premium used to calculate contributions to public sector pension plans, i.e. the difference between the actuarially assumed real rate of return on the pension fund and the prevailing yield on long term RRBs, has been close to 4% for some plans in some years and has been negative for other plans in other years.

[12] See, for example, OMERS or the Public Sector Pension Investment Board (PSPIB) (the board managing money for the pension plans covering federal employees). In particular, read page 33 of the PSPIB 2017 annual report.

risk bearers at will. They can do so without acknowledging, or even understanding, what they are doing.

For example, with real interest rates at 1% a pension plan can move the assumed risk premium from 0% to 4% by changing investment policies and/or actuarial assumptions. Doing so reduces the contributors' share of the cost from 100% to 32% while simultaneously increasing the risk bearers' share of the cost from 0% to 68%.[13]

[13] By using leverage one can, at least in theory, eliminate contributions entirely and fund 100% of the pension from the expected investment returns on a levered portfolio, leaving risk bearers to pick up 100% of the cost while contributors pay nothing.

Pensions as Employee Compensation

As we have seen, the cost of public sector DB plans is currently divided almost evenly between those who contribute and those who bear investment risk. Identifying the contributors and the risk bearers is less straightforward than it first appears.

Pension plans arise from the employment relationship. They are an element of employee compensation. In exchange for their labour, employees receive wages, pensions, and other benefits. Pensions are not gifts. Sponsoring a pension plan is not philanthropy. Pensions are supposed to be earned, not given. Employees earn them by doing their jobs and paying for their pensions.

Much is written about the merits of sharing the cost and/or the risk of public sector pension plans. A pension plan is not a partnership. In a partnership, the partners share the costs, risks, and rewards of the undertaking. In a pension plan, all of the benefits go exclusively to plan members. All of the contributions are eventually used to pay pensions to plan members. All of the rewards for risk taking materialize as additional returns in the pension fund and are used exclusively to pay pensions to plan members. Nothing is paid to the employer.

There is no merit in sharing cost and risk absent a sharing of benefits and rewards. Employees should fully earn, not half-earn, their pensions just as they are expected to fully earn, not half-earn, their salaries. Since pensions are family assets, not assets shared with employers, employees should fully pay for their pensions just as they fully pay for their houses and their cars.

How do employees pay for their pensions? They pay for them directly, or indirectly:

- directly, by contributing to the pension plan and/or by personally bearing some of the investment risk, and
- indirectly, by foregoing compensation (wages for example) in exchange for the contributions that their employers make to their

> pension plans and/or in exchange for the investment risks borne by their employers.[14]

The objective is for employees to bear the full cost of their pensions by contributing to the plan, by personally bearing risk, and/or by foregoing other compensation in exchange for the contributions made, and risks borne, by their employers.[15]

That public employees should forego other compensation in exchange for the contributions that their employers make to their pension plans is widely accepted. The standard defense for the generosity of public sector pensions has always been that public employees deserve better pensions than private sector employees because they contribute more to their pension plans and because they collect smaller salaries. This defense implicitly acknowledges that public sector salaries should be smaller than private sector salaries due to the large contributions that governments make to employee pension plans.

That public employees should forego compensation in exchange for the investment risks borne by their employers is not widely accepted. As stated earlier, the public sector believes that risk-taking reduces the cost of a pension plan and, by so doing, reduces what employees should be expected to pay for their pensions. The public sector is not troubled by the unavoidable consequence of this belief—that the reward for investment risks borne by the public goes to public employees,[16] not to those who bear the risks.

[14] When we mention employees foregoing compensation in exchange for the employer bearing risk we do not mean that the employer transfers risk to employees by adjusting their salaries year by year based on fund performance, as this would defeat the purpose of the employer bearing the risk. We mean that the employer bears all or part of the risk and that the employees' wages are reduced by an appropriate amount (say 10%) to fairly compensate the employer for bearing these risks.

[15] Public sector employers do not bear cost or risk. They are a conduit transmitting both cost and risk to the public, principally taxpayers. Depending on the context we will describe these costs or risks as being borne by employers, or by the public, or by taxpayers.

[16] The investment risk borne by the public increases the expected return on the pension fund. The plan actuary uses this to justify lower contribution rates. The employees benefit directly, through a reduction in their own contributions, and indirectly, through a reduction in the compensation they forego in exchange for their employers' contributions.

The Role of Plan Design

The division of investment risk between an employer and its employees is dictated by the design of the pension plan. We will consider three different designs:

- the *Traditional Defined Benefit Plan* (TDBP) where employers bear all of the investment risk through adjustments to their contributions,
- the *Jointly-Sponsored Pension Plan* (JSPP) where the investment risk is divided between employers and employees in proportion to their contributions, and
- the *Target Benefit Plan* (TBP) where employees bear all of the investment risk through adjustments to their pensions and/or to their contributions.

To simplify the arithmetic, we will consider a pension plan with the following attributes.

- If the pension fund invests in government bonds earning a 1% real return, the contribution rate required to fully fund pensions is 40% of pay.
- If the pension fund invests in a portfolio of stocks and bonds earning a 3.5% real return, the contribution rate required to fully fund pensions is 20% of pay.
- Contributions are divided evenly between the employer and its employees.

As discussed earlier, the cost of this pension plan is 40% of pay no matter how the pension fund is invested. If the pension fund is fully invested in government bonds, contributors contribute 40% of pay and bear 100% of the cost. If the pension fund is invested in a portfolio of stocks and bonds earning a 3.5% real return, contributors contribute 20% of pay and bear 50% of the cost. The other 50% of the cost, equivalent to 20% of pay, is borne by those who bear the investment risk.

Suppose the pension fund invests in a portfolio of stocks and bonds and expects to earn a 3.5% real return. Employees earn their pensions by

Table 2: Foregone compensation and plan design

Plan Design	Foregone Compensation (% of Pay)		
	Employer Contribution	Value of Risk Borne by Employer	Total
Traditional Defined Benefit	10%	20%	**30%**
Jointly-Sponsored	10%	10%	**20%**
Target Benefit	10%	0%	**10%**

paying for them. This means that, in addition to their own contributions and the risks they bear personally, employees should forego other compensation equal to the sum of:

- the employer contribution to the pension plan (10% of pay in our example), and
- the value of the investment risk borne by the employer (0%, 10% or 20% of pay, depending on the design of the pension plan).

Thus, employees should forego compensation equal to 10% to 30% of pay depending on the design of the pension plan, as set out in Table 2.

To test the reasonableness of this approach, examine the total amount that employees pay for their pensions as set out in Table 3.

Table 3: Employee cost and plan design

Plan Design	Cost of Pension to Employees (% of Pay)			
	Employee Contribution	Value of Risk Borne by Employees	Foregone Compensation	Total
Traditional Defined Benefit	10%	0%	30%	**40%**
Jointly-Sponsored	10%	10%	20%	**40%**
Target Benefit	10%	20%	10%	**40%**

In each case employees pay 40% of pay to earn a pension worth 40% of pay. This is what public employees should pay to earn their pensions. It is not what they actually pay because Canada's public sector employers believe that the pensions in our example cost only 20% of pay (the contribution rate) and that employees should forego compensation equal to 10% of pay (the employer contribution) regardless of the design of the pension plan and regardless of how much risk the employees bear.

Of course, public sector practice does not alter the economic reality of pension plans. The public sector cannot make pension plans inexpensive by wishing they were so or by misrepresenting the cost using deceptive accounting. By replacing column 4 in Table 3 (how much compensation employees should forego) with the 10% of pay that employees actually forego, we arrive at Table 4.

Table 4: Employee cost and plan design in Canada's public sector

Plan Design	Cost of Pension to Employees (% of Pay)			
	Employee Contribution	Value of Risk Borne by Employees	Foregone Compensation	Total
Traditional Defined Benefit	10%	0%	10%	**20%**
Jointly-Sponsored	10%	10%	10%	**30%**
Target Benefit	10%	20%	10%	**40%**

Since the objective is for employees to pay 40% of pay for a pension worth 40% of pay, the public sector approach is an obvious failure. Members of traditional defined benefit plans pay 20% of pay for a pension worth 40% of pay leaving the employer, and ultimately the public, to pick up the other 20%. This means that public sector TDBPs enjoy an unacknowledged public subsidy worth 20% of pay. JSPPs are half as bad,[17] enjoying a subsidy equal to 10% of pay. Only TBPs are properly handled and require no subsidy. Unfortunately for taxpayers, there are no TBPs in Canada's public sector.

[17] Or half as good if viewed from the employees' perspective.

Public Subsidies

Canada's public sector DB plans are large and numerous. To estimate the extent to which they rely on public subsidies we make the following assumptions:

Number of active members of public sector DB plans	3 million
Average salary	$60,000 per annum
Participation in TDBPs/JSPPs/TBPs (%)	25/75/0
Total pension fund assets	$1.4 trillion
Real discount rate used to determine pension costs	3.5%

Our estimate is based on the illustrative example presented earlier.[18] The estimated public subsidy, i.e. the difference between what public employees should pay for their pensions and what they do pay for their pensions, was 20% of pay for TDBPs and 10% of pay for JSPPs. If 25% of the employees are in TDBPs and 75% are in JSPPs, the weighted average subsidy is 12.5% of pay. Applying this to an estimated 3 million active members with an average salary of $60,000 produces an estimated subsidy equal to

12.5% x $60,000 x 3 million = $22.5 billion per annum

This subsidy can be expressed in many ways:

- $22.5 billion per annum,
- 12.5% of pay or, more precisely, 10% of pay for members of JSPPs and 20% of pay for members of TDBPs, or
- $7,500 per active member per year or, more precisely, $6,000 per active JSPP member per year and $12,000 per active TDBP member per year.

[18] The one with estimated contribution rates of 40% and 20% of pay for pension funds earning a 1% and 3.5% real rate of return respectively.

To validate the plausibility of this estimate we performed a second calculation. Suppose taxpayers bear, without compensation, all of the investment risk taken by TDBPs and 50% of the investment risk taken by JSPPs. After applying the 25/75 weighting, taxpayers bear 62.5% of the investment risk taken by public sector DB plans. With a 2.5% risk premium and $1.4 trillion invested in public sector DB funds, the risk premiums diverted from taxpayers to plan members would be

62.5% x 2.5% x $1.4 trillion = $21.9 billion per annum

Our estimate may be low for the following reasons.

- We focus exclusively on subsidies arising from the failure to compensate employers for the risks they bear. We ignore the possibility that employers might also be inadequately compensated for the contributions they make to public sector DB plans. Public sector employers appear to understand that employees should forego compensation in exchange for employer contributions to their pension plans. However, to the best of our knowledge only one public sector employer, the federal government, has attempted to demonstrate that this had been done—and was unable to do so. If public sector employers do not take the cost of pensions into account in setting employee compensation, the annual public subsidy increases by about $15 billion, to about $37 billion per annum.
- We also assume that employees bear 50% of the investment risk in JSPPs. This should be the case. We have no reason to believe that it is not the case. Still, it is unclear that employees can collectively be forced to bear these risks. Individual employees are free to retire or quit rather than making the contributions required to address deficits. New employees burdened with high pension contributions might decide to work elsewhere. Unions acting on behalf of disgruntled employees might try to negotiate higher wages to compensate members for onerous pension contributions or might threaten to withdraw from joint sponsorship agreements claiming, in each case, that they and their members had been misled about the size of the risks.
- We have also ignored the fact that public sector employees are given greater access to tax shelters than other Canadians. Contributions to public sector pension plans totaled about $49 billion in 2016. Some of this would have been for DC plans—perhaps $4 billion. If the wages of public sector DB members total about $180 billion, the annual contributions are about 25%

of pay. In addition, plan members would be able to contribute about 5% of pay to their RRSPs, bringing the total tax-sheltered contribution to about 30% of pay as compared to the 18% limit applied to Canadians who are not members of DB pension plans (75% of the workforce). As the World Bank study repeatedly emphasizes, DB plans are remarkably efficient retirement savings vehicles compared to the commercial products available to other Canadians, so public servants should need less room for tax sheltered retirement savings than others, not more.

There are many ways to improve our estimate. Some make it larger. Others smaller. All make it more complicated and contentious. For our purposes it suffices to round the number to $22 billion and make one simple point. The subsidy is large. To eliminate the subsidy employees would need to pay about 50% more for their pensions or, alternatively, bear almost three times the risk. It is not clear that they would be willing to do either, in which case public sector DB plans are, without large subsidies and despite the Canadian Pension Model, no more viable than private sector DB plans.

The World Bank study draws on the work of Keith Ambachtsheer, a Canadian and one of the world's leading pension authorities, to estimate the financial benefits of the Canadian Pension Model. This is a daunting task given the short history and the variety of practices exhibited by Canada's public sector DB plans. Ambachtsheer looked at 140 pension funds for which he had data covering the 10 years ending in 2015. Eight of these pension funds were Canadian and had the attributes associated with the Canadian Pension Model. These eight were compared to the other 132 funds. Here is what Ambachtsheer found:

- The plans using the Canadian Pension Model beat their internal passive investment benchmarks by an average of 0.6% per annum.
- The plans using the Canadian Pension Model outperformed the other plans by an average of 0.5% per annum.
- If we conclude that the Canadian Pension Model is responsible for increasing returns on investment by 0.5% per annum, the "value added" by the eight plans came to $4.2 billion per annum.

If we extend this result to all of Canada's more than 300 public sector DB plans,[19] the value added comes to $7 billion per annum based

[19] An optimistic extrapolation since many of Canada's most admired pension plans are in the group of eight examined by Ambachtsheer.

on assets of $1.4 trillion. This is a significant accomplishment—one that should be widely celebrated—but this is not the end of the story.

As we have shown, there is another significant contributor to the success of Canada's public sector DB plans—the Canadian public. The public bears most of the investment risk but receives none of the reward for risk taking. As demonstrated earlier, the risk premiums earned by public sector pension plans in respect of risks borne by the public should generate about $22 billion per annum for Canada's public sector DB plans. If the $7 billion generated by the Canadian Pension Model is instrumental in the success of our public sector DB plans, how much more instrumental must $22 billion be?

About this, the World Bank study says nothing.

Governance

> "Strong, independent governance is perhaps the most important element of the Canadian model."
>
> —World Bank (2017), *The Evolution of the Canadian Pension Model*

The 2017 World Bank study attaches great importance to governance. The word "governance" appears 146 times. "Good governance," "strong governance," and "independent governance" appear 23 times. "Weak governance" and "bad governance" never appear.

Public sector pension plans are an extension of the employment relationship. Public sector unions negotiate pensions with public sector employers.[20] Unions represent public employees; employers represent the public. The interests of employees and employers seldom align in discussions of compensation and benefits. Employees want more. Employers want to spend less. Differences are resolved at the bargaining table.

Public sector pension boards usually owe a statutory or fiduciary duty to plan members. Pension boards representing plan members cannot balance the conflicting interests of plan members and the public. These conflicts are best resolved through an adversarial bargaining process, not the amicable, deliberative processes favoured by pension boards.

Governments must be cautious in delegating powers to pension boards. As long as pension boards represent only the interests of plan members, they should not have the power to improve pensions at public expense or to shift burdens from plan members to the public. Their job is to administer pension plans negotiated by others, not to expand upon or reimagine these plans.

[20] Sometimes pensions are not negotiated; they are imposed by the employer. The existence of a pension plan and the economic value attached to the plan will influence negotiations about other compensation elements such as wages. Thus, pensions can figure prominently in discussions and negotiations even where the terms of the pension plan are not negotiated.

The public sector believes that pension costs are borne entirely by contributors. Risk bearing, particularly by the public, plays no part. The public sector never questions the wisdom of allowing pension boards to set investment policy. If, as we have argued, risk taking shifts pension costs from plan members to the public then allowing pension boards to control risk taking is just as dangerous as allowing pension boards to control pension benefits or employer contributions. If a pension board has the power to increase the investment risk borne by the public then it has the power to enrich public employees at public expense. Arguably, it has a fiduciary duty to do so.

As demonstrated earlier, the members of public sector DB plans receive 100% of the reward for risk taking but bear at most 50% of the risk. That these members are well served by risk taking should be self-evident. That a pension board exclusively representing the interests of plan members will be tempted to take large risks is equally self-evident. That this arrangement poorly serves the public should be self-evident as well.

Outside Canada's public sector this arrangement is called moral hazard, not good governance. Moral hazard is "the chance that the insured will be more careless and take greater risks because he or she is protected, thus increasing the potential of claims on the provider… Moral hazard arises when a contract or financial arrangement creates incentives for the parties involved to behave against the interest of others."[21]

Investment decisions, in particular decisions about how to balance risk and reward when one party bears the risk and another party enjoys the reward, should not be made by fiduciaries representing the second party. To do so invites reckless behaviour.

This is most easily demonstrated by an example. Suppose a public sector TDBP is fully funded with a contribution rate equal to 20%[22] of pay divided evenly between the employer and its employees. Suppose the cost of the plan, properly determined using a 1% real interest rate, is 40% of pay. Finally, suppose the union representing employees wants a plan improvement that can be funded in one of two ways.

- Option #1: Increase employee and employer contributions by 2% of pay, to 12% of pay.
- Option #2: Increase the real rate of return on the pension fund by 0.5%, to 4.0%, by adopting a more aggressive investment strategy or by pressuring the plan's actuary to adopt more optimistic assumptions, thereby avoiding any increase in contribution rates.

[21] Financial Times *Lexicon* <http://lexicon.ft.com/Term?term=moral-hazard>

[22] Based on a 3.5% real rate of return.

From the public sector's perspective, neither option costs the government, or taxpayers, anything. Option #1 increases the cost of the pension plan by 4% of pay but, at least in theory, the full cost is borne by employees.[23] Option #2 improves the plan without increasing contribution rates. Hence, from the public sector perspective, the improvement costs nothing. Plan members prefer the second option, which improves the plan at no cost to them. Since the pension board represents plan members, the pension board should also favour Option #2.

Now look at the same decision from the taxpayer's perspective.[24] Option #1 costs taxpayers 4% of pay.[25] Option #2 costs taxpayers 8% of pay.[26]

The combination of public sector accounting and public sector pension governance drives plans to choose Option #2. Plan members receive an improvement worth 8% of pay for which they pay nothing. Taxpayers bear additional investment risk worth 8% of pay for which they receive nothing. Of the two funding options, both bad from the taxpayer's perspective, the public sector gravitates to the one that produces the best outcome for plan members and the worst outcome for taxpayers. The pension board does what bad governance requires it to do—advance the interests of plan members at taxpayer expense. Finally, to add insult to injury, the World Bank study calls this "strong, independent governance" and proclaims it a shining example for the world to emulate.

This problem does not arise in the private sector where there is no Option #2 delivering improved benefits at no apparent cost. Taking risk and/or changing the assumed return on investment do not reduce the cost of a pension plan in the private sector. When you improve private sector pensions, employees pay, one way or another; they contribute more and/or they forego other compensation in exchange for the improvement. In the public sector there is always an option #2—a way for members to get something for nothing at taxpayer expense.

We believe that it is rare for plan improvements to be financed by risk taking, even in the public sector. The example shows how this could happen. It demonstrates how bad accounting creates an incentive for pension boards to behave recklessly and how bad governance requires them to

[23] Half directly through the increase in employee contributions; half indirectly by foregoing other compensation in exchange for the increase in employer contributions.

[24] We assume that the proposed plan improvement increases the cost of the plan, measured using riskless interest rates, from 40% of pay to 48% of pay.

[25] The plan improvement costs 8% of pay and members pay half of this, 2% as additional contributions and another 2% as an increase in foregone compensation.

[26] The plan improvement costs 8% of pay; members bear none of this additional cost.

do so. Yet in our experience pension boards seldom behave this way. They instinctively distrust suggestions that plan improvements can be had at no cost by taking more risk. They understand that when something appears too good to be true it is usually untrue. They are cautious by nature, as are the public servants who represent employers in these discussions.

However, those who refuse to take risk to earn a profit will often voluntarily take the same risk to avoid a loss. This is arguably the most important discovery of behavioural economics. Pension boards, like people, are not entirely rational. They can reject risk-taking to pay for plan improvements while embracing risk-taking to avoid contribution increases.

Returning to our example, suppose low interest rates and slowing economic growth lead the plan actuary to conclude that the actuarial assumptions need to be strengthened. The pension board is presented with two options.

- Option #1: Reduce the assumed real rate of return on the pension fund by 0.5%, to 3.0%, and increase employee and employer contributions by 2% of pay, to 12% of pay.
- Option #2: Adopt a more aggressive investment policy so the actuary can keep the 3.5% real return assumption, thereby preserving the 10% contribution rate.

In the previous example we examined the merits of taking risk to pay for plan improvements. Now we examine the merits of taking risk to avoid contribution increases. In each case, plan members favour Option #2, which relieves them of any obligation to pay more. In each case, Option #2 appears not to cost the employer anything from the public sector perspective while requiring taxpayers to bear additional risk worth 8% of pay. In each case, the pension board should favour Option #2 because it is unambiguously better for plan members. The difference, this time, is that neither the pension board nor the public servants representing the employer will be uncomfortable ratcheting up taxpayer risk to avoid increasing contribution rates. This has become a public sector tradition.

There is always an alternative to raising contribution rates or reducing pension benefits in the public sector. The alternative is to take more investment risk and/or to adopt optimistic, arguably unrealistic, actuarial assumptions. This does not make the pension plan more affordable; it just shifts the economic burden from employees who oppose contribution increases to taxpayers who do not know what is being asked of them and who rely on governments to defend their interests.

Canada's public sector pension plans are well governed in many ways. Their strengths are documented in the World Bank study. Unfortunately, the most important duty of pension boards, managing the pension

plan's investments, is not well governed. Taxpayers bear most of the risk. Members reap all of the rewards. Investment decisions are made by fiduciaries exclusively representing plan members. This situation is not one of which our public sector plans should be proud. It is not something that other countries should emulate. It is not good governance.

The Accounting Problem

Canada's public sector employers and the managers of public sector pension plans seldom appreciate how much their pension plans cost or who pays for them. Private sector employers were similarly confused in the 1970s and 1980s, before the accounting profession adopted standards that forced them to properly recognize pension costs. For reasons that are hard to fathom, the Public Sector Accounting Board (PSAB) has allowed public sector employers to misrepresent pension costs long after the Accounting Standards Board forced private sector employers to do the job properly.[27]

Pension boards are concerned about the PSAB's ongoing review of pension discount rates. They fear the adoption of standards that resemble those found in the private sector. For Canada's public sector DB plans, this is the proverbial hill to die on.

Table 5 summarizes the responses to the PSAB's recent request for comments on the discount rate. At the risk of oversimplifying, there are essentially two options:

1. The status quo—allowing public sector employers with funded pension plans to use the expected return on plan assets as the discount rate, as they do now; or
2. The private sector approach—prescribing a discount rate equal to the yield on long term, high quality bonds.

In our example, the status quo allows the employer to disclose a pension cost equal to 20% of pay. The private sector approach would force the employer to disclose a pension cost equal to 40% of pay. The views expressed to the PSAB, by category of respondent, are shown in Table 5.

The pension standards in question are those governing the financial statements of public sector employers sponsoring DB pension plans. At issue is the way that public sector employers, predominantly governments,

[27] The PSAB is undertaking a thorough review of the standards governing the choice of a discount rate to calculate the pension costs and liabilities disclosed in public sector financial statements. This review has been underway for several years. Any changes will likely take effect several years from now.

Table 5: Response to the Public Sector Accounting Board's invitation to comment, by type of respondent

Respondent Type	Number of Respondents	% Favouring the Status Quo
Pension Plans/Boards	13	100%
Unions	5	100%
Governments	10	80%
Auditors General	5	40%
Audit Firms	4	0%

disclose pension costs to the users of their financial statements. Public sector pension boards, who are not directly affected by these standards, have apparently decided that their mandate now includes lobbying for accounting standards that mislead the public about the cost of the pension plans they administer. Public sector pension boards and unions strongly support the status quo. Eighty percent of government respondents, the group responsible for representing the public interest, believe that the public should be spared a proper accounting for pension costs. Only the audit firms and a majority of the Auditors General believe that public sector pension accounting standards need to change.

The comments of those favouring the retention of the status quo do not raise principled objections to the changes they fear. They support the status quo because it allows employers to report low, stable pension costs. They dislike the alternative because it would force employers to report high, variable pension costs. Little is said about the substance of the issue, i.e. about whether the costs being reported should properly be viewed as low and stable or high and variable. The following comments are typical

> A change in discount rate to a lower bond rate or risk-free rate for pension plans would have significant negative impact to the reported financial positions of many governments, including Nova Scotia. The result is a high chance that public pension plans, such as the TPP, would be placed in an unsustainable position and face termination, which obviously would have a very significant negative impact both on members of the plan and on society as a whole through increased reliance on social programs.
>
> —Nova Scotia Pension Services Corporation

> If we have to adopt private sector standards our cost will be high and volatile and employers will look for ways to exit the plans.
>
> —OPTrust

> A wave of defined benefit plan closures in the private sector globally can be traced directly back to adverse changes in accounting rules causing high liabilities and swings in earnings of companies. Public pension plans in Ontario are well managed and governed, efficient and secure. They provide retirement security to many Ontarians and contribute to the well being of society as a whole. These attributes should be recognized in PSAB's ongoing consultation.
>
> —OPSEU

> We are strong proponents of the defined benefit pension plan model. It is our core belief that modern, well managed and governed defined benefit pension plans are the most effective and efficient way to provide retirement security to Canadians which in turn reduces the reliance on publicly funded social programs. As such, we have interest in the development of accounting guidance that reflects the nuances of Canadian public pension plans.
>
> —CAAT (Ontario), LAPP (Alberta), Saskatchewan Health Care Employees pension plans

> As stated in HOOPP's submission, PSAB is urged to consider the implications of changes to discount rate guidance to help avoid any scenario where the province feels pressure to address pension shortfalls created by a reduced interest rate that is disconnected from the expected long-term fund return.
>
> —Ontario Hospital Association

The concerns expressed are understandable. The status quo has been extraordinarily beneficial to public sector DB plans. Plan sponsors have been able to materially understate pension costs and to mislead both themselves and the public. This, in turn, has allowed them to offer public employees extraordinary pensions at bargain prices.

Public sector unions, employers, and pension plans are fully committed to the status quo. They believe that the cost of public sector pensions can be reduced by exposing the public to large investment risks. They believe that public sector DB plans deserve large rewards for taking

risks but that taxpayers deserve no reward for bearing them. They believe that all Canadians are better off when public servants receive extraordinary pensions at subsidized prices. Their arguments are supported by little other than a profound sense of entitlement. Still, these are powerful, influential organizations accustomed to getting their way.

Failing to Protect the Public Interest

The public sector believes that "pension envy" motivates those who criticize public sector DB plans. To some extent this is true, but not in the way they imagine. Critics don't envy the large, indexed pensions that public employees receive when they retire after 30 years of public service. Critics resent the fact that public employees do not fully pay for their pensions and that governments work very hard to conceal this fact.

One seldom reads about "RRSP envy." Some Canadians contribute large amounts to their RRSPs. They invest the money. They take and bear investment risk. If all goes well they earn a decent return and retire with a good income. Their success is largely their own doing. It is not at the expense of other Canadians.

Public sector DB plans are not like this. It is hard to say how much public employees pay for their pensions. It is not clear whether they deserve the excellent returns that their pension funds earn by taking risks borne by the public. Mostly there are unanswered questions:

- questions about how governments can afford such expensive pension plans when no one else can,
- questions about why pension plans covering risk averse public servants take so much investment risk, and
- questions about who benefits from this risk taking and who ends up holding the bag when things go wrong.

These are good questions. They deserve good answers. So far, none have been provided by the defenders of public sector plans.

As long as the public subsidizes public sector DB plans, the interests of public employees will conflict with the public interest. Unions representing public employees will try to maximize the subsidies enjoyed by their members. They succeed by maximizing the investment risk borne by the public without compensation. Governments representing the public should do the opposite. They should try to minimize public subsidies by

minimizing the investment risk borne by the public or by ensuring that the public is properly compensated for the risk it bears.

How goes the struggle? For taxpayers, not well. Consider the positions that the parties should logically adopt.

- Public employees want to pay 20% or 30% of pay for a pension worth 40% of pay. With this in mind, public employees want a fully funded TDBP with extraordinary benefits. They want a large pension fund taking large investment risks borne entirely by taxpayers without compensation. They favor public sector accounting practices that misrepresent the cost of pensions by ignoring the role played by those who bear investment risk.
- Taxpayers want a pension plan where employees pay, directly or indirectly, for the pensions they receive. Taxpayers can live with employees having extraordinary pensions worth 40% of pay, but only if employees pay 40% of pay for their extraordinary pensions. Taxpayers favor private sector accounting practices to ensure that employees pay a fair price for their pensions. Failing this, taxpayers prefer pension plans where employees bear all of the investment risk, i.e. defined contribution pension plans or target benefit plans. If public sector employers insist on TDBPs or JSPPs and use improper accounting to shield employees from the cost of their pensions, then taxpayers will prefer unfunded pension plans[28] or funded pension plans fully invested in government bonds. If taxpayers aren't adequately compensated for bearing investment risk, why would they want public sector DB plans to take investment risk? This is not pension envy. It is an understandable and entirely rational desire to avoid subsidizing the pensions of public employees when others are expected to pay their own way.

Our public sector pension plans are virtually identical to the public employee preferences identified in the first bullet. In essence, our governments have decided to sponsor pension plans supported by large public subsidies. Public sector unions have done an extraordinary job for their members. Governments have conspicuously failed to represent the public interest.

How might governments have avoided subsidizing the pensions of public employees?

[28] Public sector accounting standards require employers to determine the cost of unfunded pension plans by discounting future payments at prevailing interest rates.

- they could have decided not to sponsor employee pension plans, or
- they could have decided to sponsor pension plans where employees bear all of the investment risk, i.e. defined contribution plans or TBPs, or
- they could have decided not to fund their pension plans, or
- they could have retained control of investment policy to prevent pension funds from taking investment risks that taxpayers must bear without compensation, or
- they could have adopted private sector pension accounting practices, as they are permitted to do, to ensure that pension costs are properly measured and disclosed and to ensure that public employees pay a fair price for their pensions.

Had even one of these decisions been made to protect taxpayers, public employees would be expected to pay for their pensions just as other Canadians do. Of course, public employees will not want to pay 40% of pay for pensions worth 40% of pay. When you subsidize risk-taking, pension plans take too much risk. When you subsidize the price that employees pay for their pensions, employees ask for extravagant pensions—pensions that they would not seriously consider if they had to bear the full cost themselves.

Consider, for example, the Public Service Pension Plan (PSPP) covering 300,000 federal public servants. According to the PSPP's most recent annual report, "overall responsibility for the public service pension plan lies with the President of the Treasury Board." The President of the Treasury Board is supported by the following:

- the Treasury Board of Canada Secretariat,
- Public Service and Procurement Canada,
- the Office of the Chief Actuary,
- the Public Sector Pension Investment Board (PSPIB), and
- the Public Service Pension Advisory Committee.

The Public Service Pension Advisory Committee consists entirely of plan members. The employees of the Treasury Board Secretariat, Public Service and Procurement Canada, and the Office of the Chief Actuary are plan members as well. As far as we can see, the President of the Treasury Board receives advice only from plan members and from an organization, the PSPIB, with a statutory duty to plan members. For many of these advisors, their pension is their largest asset. This is fertile ground for conflicts of interest and bad advice. Who is supposed to protect the public?

Even if the public servants who advise the president of the Treasury Board rise above their personal interests and do the right thing for the Canadian public, the process is far from ideal. More importantly, the outcomes have been far from ideal.

The federal government has been rolling out faux pension reforms for a decade. The government believes that it has taken huge strides when, in fact, it has accomplished almost nothing. The federal government did increase employee contributions by 3 percentage points to 10% of pay over a 5-year period.[29] Members now pay half of the current service contribution but, since members bear none of the investment risk, their contributions cover only 25% of the cost of the plan.[30] This reality is ignored in the Treasury Board president's message.

> In fiscal year 2016 to 2017, employee pension contribution rates were increased, and we reached the targeted employer/employee cost sharing ratio of 50:50 by the end of 2017. Achieving this target took 5 years, and it ensures a more equitable sharing of the cost of the pension plan between the employer and plan members. (PSPP, 2017: 1).

Encouraging employees to believe that their 10% annual contribution covers 50% of the cost of a pension worth 20% of pay when, in fact, it covers 25% of the cost of a pension worth 40% of pay is a serious distortion of the facts. Encouraging members to believe that they should pay for 50% of the cost of their pensions when they should pay for 100% of the cost of their pensions is a second serious distortion. Presumably the president's message was reviewed by some of his many advisors and supporters. Apparently none questioned the accuracy of the allegations. How likely is it that taxpayers will fare well in future negotiations if they are represented by public servants with conflicting interests and a limited understanding of the facts? How is this situation best described? Is it poor governance? Or is it the abject failure of the federal government to do the job that good governance requires it to do?

[29] Whether this 3% was returned to employees as salary increases over and above those enjoyed by other Canadians is an open question.

[30] i.e. they pay 50% of the 50% of the cost covered by contributions and 0% of the 50% of the cost covered by risk bearing.

Coping with Adversity

Real interest rates averaged more than 4% in the 1990s. They have averaged about 1% in the 2010s. This has serious implications for DB pension plans and, more generally, for retirement savings plans. In this section we examine how public subsidies, perverse incentives, and poor governance have influenced the behavior of public sector DB plans during the last 20 years.

Table 6 is a slimmed down version of Table 1. Columns 4 to 6 have been removed, as have all but two blocks of rows—the blocks for real interest rates of 1% (the 2010s) and 4% (the 1990s).

Table 6: The impact of real interest rates on pension cost

Investment Return Attribution			Pension Cost Attribution (% of Pay)		
Real Riskless Rate (1)	Risk Premium (2)	Real Return (3) = (1) + (2)	Contributors (7) = (4) x (9)	Risk Bearers (8) = (5) x (9)	Total (9)
1%	0.0%	1.0%	43%	0%	43%
	1.0%	2.0%	32%	11%	43%
	2.0%	3.0%	24%	19%	43%
	3.0%	4.0%	18%	25%	43%
	4.0%	5.0%	14%	29%	43%
4%	0.0%	4.0%	18%	0%	18%
	1.0%	5.0%	14%	4%	18%
	2.0%	6.0%	10%	8%	18%
	3.0%	7.0%	8%	10%	18%
	4.0%	8.0%	6%	12%	18%

Source: Table 1.

Suppose our illustrative pension plan adopted the conventional 60/40 asset mix[31] and expects to earn a 2% risk premium. In the 1990s with real interest rates at 4%, the pension plan cost 18% of pay and could have been supported by contributions equal to about 10% of pay. In the 2010s the same pension plan with the same 60/40 asset mix costs 43% of pay and requires a 24% contribution rate. Both the cost and the contribution rate, expressed as a percentage of pay, have increased by about 140% with no change in plan design. Low interest rates are a serious problem for both DB pension plans and individual retirement savers.

If employees understand and accept that low interest rates make their DB pensions more valuable, employers could ask employees to pay more for their DB pensions through higher contributions and/or lower salaries. This didn't happen in either the public or private sectors, for very different reasons.

In the private sector most employers believed, correctly in our view, that employees did not want to pay substantially more for the same unremarkable pension. Rather than charge employees the added cost, private sector employers closed their DB plans and replaced them with savings plans. Employees could then decide for themselves how to react to low interest rates.

Without a DB plan, employees have options. For many, a large, immediate increase in personal savings is not the best way to react to plunging interest rates. Some prefer to pay down their debts. Others choose to delay their retirements. Still others opt to work part time or to live more frugally after they retire. Many procrastinate. They wait for interest rates to rise. They hope that their houses appreciate so they can use the additional home equity to supplement their retirement incomes. If all else fails they have GIS, OAS, C/QPP and Medicare to fall back on. Each confronts their retirement savings challenge knowing that they, not someone else, must live with the consequences of their decisions or indecision.

Things work differently in the public sector. Public sector DB plans can address low interest rates by increasing contribution rates and/or by reducing benefits. Neither option is popular. Fortunately for public employees, there is a third option. Public sector DB plans can take more risk or, alternatively, they can simply ignore the reduction in interest rates as long as their actuaries are prepared to do so. By pretending nothing has changed they can continue to charge 1990s prices for pensions earned in the 2010s. Of course, individual savers can also pretend that nothing has changed but if they are wrong, they must live with the consequences. If public sector DB plans are wrong today's members will eventually be

[31] i.e. 60% equity and 40% fixed income.

bailed out by taxpayers and, in the case of JSPPs, by the next generation of plan members.

Viewed from a distance, our public sector DB plans are little changed from the 1990s; they provide 70% income replacement after 35 years of service[32]; early retirement at or before the age of 60; and significant inflation protection.

To maintain contribution rates at acceptable levels, most public sector DB plans have held their return expectations at or near 1990s levels. Their actuaries continue to use nostalgic expectations to set contribution rates *for future service.*[33] There are exceptions. The Ontario Teachers' Pension Plan (OTPP) recently reduced the assumed real rate of return on its pension fund to 2.75%,[34] substantially less than the 4.35% used as recently as 2003. But for every OTPP there are several plans that have ignored dramatic reductions in long term interest rates. For example, the pension plan covering the federal public service has reduced the assumed real rate of return on investment from 4.25% to 4.10% over two decades.

There have been significant changes in the way public sector pension plans manage their investments. Consider how asset mixes changed from 1996 to 2016 (see table 7).

Between 1996 and 2016, public sector pension funds cut back their exposures to both fixed income (by 8 percentage points) and equities (by 12 percentage points) while significantly increasing their exposure to other assets (by 20 percentage points).

These asset mix changes were accompanied by other changes.

- In 1996 equity investments were largely in public equity in developed countries. Today private equity and emerging market equity play a larger role. An examination of four large Ontario JSPPs[35] at the end of 2017 revealed that private equity now accounts for about 40% of all equity investments. Private equity is expected to deliver higher returns with added risk.

[32] Including C/QPP pensions.

[33] JSPP contribution rates increased noticeably in the years following the global financial crisis as contributors bore the losses. However, contribution rates for the additional pensions employees earned each year were little changed from the 1990s.

[34] The province of Ontario uses a 4% real rate of return to calculate the cost of the OTPP in its financial statements so the use of a responsible funding assumption by the OTPP has been effectively undone by the use of an irresponsible accounting assumption by the province.

[35] The Ontario Teachers' Pension Plan, OMERS, the Ontario Pension Board, and OPTrust.

Table 7: Public sector asset mix, 1996 and 2016

	1996	2016
Fixed Income[a]	45%	37%
Equities[b]	43%	31%
Other Assets[c]	12%	32%
TOTAL	**100%**	**100%**

[a] Bonds, mortgages, and short-term fixed income, including real return bonds.

[b] Public and private equity.

[c] Including real estate, infrastructure, commodities, etc.

Calculated by the authors from data in Statistics Canada Table 11-10-0076-01.

- Public sector plans rely more heavily on investments that do not trade in public markets. At the end of 2017 the aforementioned four Ontario JSPPs had over 50% of their investments in assets with no observable market value. They use appraisals or financial models to provide informed estimates of what these investments are worth. These estimates are called market values but they do not behave like market values. They are more stable without being less risky. By replacing observable, volatile market values with unverifiable, stable estimates, pension plans encourage users of their financial statements to underestimate the investment risks they take.

For all of these reasons, it is difficult to compare the risks that public sector DB plans now take to the risks that they took 20 years ago. Today's asset mix is not demonstrably less prudent, or more prudent, than asset mixes 20 years ago—but the story doesn't end there.

The risk that a pension fund takes depends on the number of dollars invested as well as on the asset mix. In 1996 the assets in public sector pension plans totaled $396 billion. In 2016 the total was $1,348 billion, an increase of about 240%.[36] The plans' ability to tolerate risk has also increased since 1996, but not by the same amount. In 1996 public sector compensation was $109 billion. In 2016 it was $251 billion, an increase of

[36] The asset values are for public sector registered pension plans, including DC plans. Since DC plans are a small percentage of the total, the growth rate should be quite close to the growth rate for public sector DB plans.

Table 8: The Equity Risk Premium for Canadian Equities[a]

Periods ending in 2017		Consecutive 25-year periods	
25years	1.30%	1993-2017	1.30%
50 years	0.90%	1968-1992	0.60%
75 years	4.10%	1943-1967	10.60%

[a] The compound average rate of return on Canadian equities minus the compound average rate of return on long term Canada bonds for the same period.

about 130%.[37] If public sector DB plans had the same asset mix in 2016 that they did in 1996, the investment risk would have increased by 240% while the ability to tolerate risk[38] would have increased by 130%. Put the two together and the risk that plans are taking, measured by contribution rate volatility, has increased by about 50% ignoring any change in asset mix.

The growth in pension funds is a natural, foreseeable consequence of pension plans maturing as our population ages. For some public sector plans this process is almost complete. For others it is just starting. To preserve the level of risk to which they are exposed, plans should derisk their asset mixes as they mature. They have not done so.

For the purpose of calculating contribution rates, what rate of return can we reasonably expect from a pension fund with a 50/50 equity/bond mix?[39] Since the real yield on long term RRBs has averaged 1% during the last decade, we will use 1% as the expected real return on long term government bonds. The rate of return on equities should be higher. In Table 8 we compare the difference between the rate of return on Canadian equities and the rate of return on Canadian long bonds over periods ending in 2017 (the first two columns) and over non-overlapping 25-year periods (the last two columns).

[37] Public sector compensation refers to more than wages and salaries and includes compensation for public sector employees who are not members of pension plans. For our purposes this provides an adequate approximation to the rate of growth in wages and salaries for DB pension plan participants.

[38] Since investment losses will typically be addressed by increasing contribution rates, the increase needed to recover a particular loss is inversely proportional to the payroll.

[39] If we adjust the asset mix in Table 6 by assuming that "other assets" can be approximated by a 60/40 mix of equities and fixed income, we arrive at an adjusted 50/50 asset mix in 2016.

The equity risk premium averaged about 1% over the last 50 years. During the 25 years before that it averaged over 10%. Over the full 75 years it averaged about 4%. If we look at US equities[40] the risk premiums are about 1% higher. The equity risk premiums for foreign (non-US) equities have been lower than US equity risk premiums and, during the last 25 years, lower than Canadian equity risk premiums.[41]

A 2% risk premium is reasonable looking at the last 50 years. A 5% risk premium is arguably reasonable looking at the last 75 years. However, there is no reason to believe that the next 25, 50, or 75 years will resemble the last 50 or 75 years given changes in demography, indebtedness, monetary policy, the environment, etc. We will use a 3% equity risk premium to estimate future returns. The reasonableness of this estimate can be neither proven nor disproven with conviction. The same can be said of 2% or 4%. Actuarial judgement has a material impact on the choice of an expected rate of return and, by extension, on the amounts that public employees pay for their pensions.

With 50% of the assets invested in equities, a 3% equity risk premium and a 1% real return on long term government bonds, an actuary might reasonably expect public sector pension funds to earn a 2.5% real return (1.0% + 50% x 3.0%).[42] This is 1% lower than the 3.5% real return typically used by public sector DB plans to set contribution rates. In our view this 3.5% assumption is optimistic, probably unreasonably so as its justification requires the use of a 5% equity risk premium.

Of course, a TDBP does not need to earn a 3.5% real return to do a spectacular job for plan members. Today's members only need the actuary to assume that the pension fund will earn a 3.5% real return. This return will then be guaranteed to members for as long as they live.[43] If the pension fund only earns a 2% real return, future taxpayers will be expected to make up the shortfall. Once the contributions are made and the presumed rewards for future risk taking are distributed to today's plan members, the future becomes someone else's problem.

Public sector DB plans have resisted reducing their expected rates of return in the face of record low interest rates. Their benefits are largely

[40] Since public sector DB plans invest much more heavily in US equities than in Canadian equities, the US equity risk premium is more relevant.

[41] These statistics come from Tables 1 and 6 of the Canadian Institute of Actuaries *Report on Canadian Economic Statistics 1924-2017*.

[42] This calculation ignores both investment expenses and the non-linear relationship between the equity risk premium and the return on a balanced portfolio as a function of the percentage invested in equities. These factors largely offset.

[43] On the amounts contributed while the 3.5% rate is used to set contributions.

unchanged from 20 years ago. Contribution rates for the pensions earned each year are little changed. What has changed is the level of risk borne by taxpayers and the degree of optimism that actuaries have incorporated in their assumptions. In other words, the plans have coped with adversity by shifting financial burdens to taxpayers and, in the case of JSPPs, to future plan members.

If plan members had to properly compensate taxpayers for the investment risks taxpayers bear or, alternatively, if they had to bear these risks themselves, public sector employees would have the same difficult choices as other Canadians. In a world with low returns, Canadians can save more, retire later, or reduce their retirement income expectations. They can take more risk, but only if they are prepared to bear more risk. As long as public sector workers are insulated from this reality at taxpayer expense, public sector DB plans will remain expensive anachronisms.

Conclusion

In Canada we have two pension solitudes: a generous defined benefit system for public employees backstopped by taxpayers who increasingly have little or no workplace pensions of their own. The gap between public and private sector pensions has been widely noted. What has been missing is an explanation for why this gap has widened from a crevice to a canyon.

This paper attributes the growing divide between public and private sector pensions to the public sector's mistaken belief that pension costs can be insulated from falling interest rates by taking more investment risk and/or by adopting unrealistic actuarial assumptions. They believe that they have stumbled upon a clever way to stabilize pension costs when, in fact, they have stumbled upon a clever way to shift pension costs from plan members to the Canadian public. Other Canadians do not have this option.

Canada's public sector DB plans do an outstanding job for public employees. Their investments have performed well. They operate efficiently. They are funded responsibly, at least relative to the practices of public sector plans in other countries. Collectively these practices, often called the Canadian Pension Model, provide useful building blocks from which to construct an exemplary pension system. However, until our public sector DB plans end their reliance on large public subsidies, poor accounting and bad governance, any celebration of their success is premature. They must be more open about the risks they take and about who bears these risks. They must learn to succeed on their own merits, not on the backs of other Canadians. Only then should they be touted as a shining example for others to follow.

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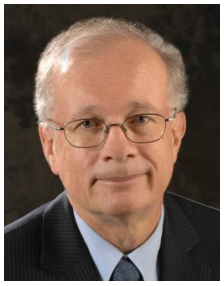

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