

The Canada Pension Plan: Part 2 - The Future

By Frederick Vettese, Chief Actuary
and Bonnie-Jeanne MacDonald
September 2016



Table of Contents

1	Introduction
4	Section 1 - A recap of the CPP before and after enhancement
5	Section 2 - What the CPP enhancement accomplishes
10	Section 3 - How workplace pension plans will change - general
12	Section 4 - How workplace plans will change - specifics
17	Conclusions
18	Appendix - Assumptions underlying the <i>LifePaths</i> projections

Introduction

Part 1 of this report on the Canada Pension Plan (CPP) was released in July. It set out the history of the CPP right up to the enhancement that was announced by the Minister of Finance in June. This Part 2 looks to the future.

The proposed expansion of the CPP may not appear to be all that significant. It will increase required contributions by a mere 2 percent of pensionable earnings, which hardly seems enough to stem the retirement crisis that two thirds of employers think the country is headed for. By comparison, employers and participants of most public sector pension plans regularly contribute 20 percent or more of pay *on top of* CPP contributions in order to arrive at their own definition of an adequate benefit.

While the pensionable earnings ceiling under the CPP will also increase, that will not happen for another eight years and even then only by 14 percent. Most of the high profile CPP expansion proposals had been recommending a 100 percent increase in the ceiling¹.

Special terminology in this section:

Pensionable earnings: The portion of employment earnings on which CPP contributions are made.

DB: Defined benefit (pension plans).

Pillars: Refers to the foundation of our retirement income system:
Pillar 1 - OAS/GIS,
Pillar 2 - CPP and QPP,
Pillar 3 - tax-assisted vehicles such as workplace pension plans and RRSPs.

¹ For details, see Part 1 of this two-part series. It is available on www.morneaushepell.com by clicking "Knowledge and Insights" and choosing "Books and Reports".

It should therefore come as no surprise that preliminary long-term projections of retirement income adequacy – which are presented for the first time in this paper – confirm the modest impact of the CPP enhancement. Once the enhancement is fully phased in, barely half the population is expected to retire with an appropriate level of income (“appropriate” to be defined later).

In this report, we cite preliminary results from a research project that is still in progress (referred to here as MacDonald and Vettese (2016)². These results are high-level only since they do not explore the underlying reasons for the impact. Understanding the true dynamics of the CPP enhancement within the larger picture of retirement income security for Canadians will eventually require a deeper analysis, which will include:

- projecting the diverse implications of the CPP enhancements across the population,
- the tradeoffs that are occurring within the Canadian retirement income system (that is, the magnitude of how the income flows from OAS, GIS, registered pension plans, and income taxes are responding to the enhanced CPP benefit),
- measuring the CPP contribution levels and benefits levels before and after the enhancements (to understand how much “value” Canadians are receiving for these enhancements), and
- testing how different enhancements to the CPP would have affected the outcomes.

The three waves of pension reform

- **The first wave** of pension reform occurred in the early 1960s. It led to the initial provincial pension benefits acts, the last significant improvement in Old Age Security, and the creation of both the C/QPP and the Guaranteed Income Supplement.
- **The second wave**, which started in the mid-1980s, modernized workplace pension plans by strengthening the rights and entitlements of pension plan members.
- **The most recent wave** began in 2007 when the Ontario government appointed a commission to explore ways to reverse the dwindling coverage in DB pension plans. Most of the other major provinces followed suit with pension commissions or task forces of their own and most had a similar focus on DB plans.

Eventually, the irreversibility of the DB decline became self-evident and the purpose of pension reform morphed into a quest to improve coverage by introducing new types of retirement vehicles such as Pooled Registered Pension Plans. Unfortunately, these new vehicles were slow to gain acceptance which led to pressure from certain governments, Ontario in particular, to expand the CPP.

² It is tentatively titled “The Canada Pension Plan Reform: What Does it Really Mean for Future Canadian Seniors?”.

We will argue that the CPP enhancement is of historical importance in spite of its modest nature. That is because it essentially marks the end of the third major wave of pension reform. (See sidebar, “The three waves of pension reform”.) Governments can devote only so much attention and political capital to any one issue and pensions have garnered more than their fair share for most of the last decade. For the foreseeable future, we can expect that governments will turn their attention to other matters, such as rising healthcare costs.

While the CPP enhancement will not provide all Canadians with appropriate retirement incomes, this was perhaps an unrealistic goal. As long as Pillar 3 consists of a patchwork of voluntary retirement vehicles, there will always be workers whose retirement incomes are too low or too high. A small CPP enhancement like the one we were handed is better than none, especially for the many private-sector workers who will remain without Pillar 3 coverage. A bigger enhancement was not politically possible and besides, it might have siphoned too much money out of a fragile economy.

Another positive aspect of reaching a deal (on CPP enhancement) is that we are now more certain about what to expect from Pillars 1 and 2. Employers who have been

sitting on the sidelines waiting for governments to take action can now start thinking about revamping their existing pension plans, or establishing new ones.

In our opinion, the role of workplace pension plans will be augmented rather than diminished by the CPP enhancement. Such plans are the best hope for increasing the number of workers who will eventually retire with an appropriate level of retirement income.

To be clear, revamping workplace plans does not necessarily mean increasing pension benefits. One undesirable side-effect of a bigger CPP is that it pushes many people out of the “appropriate” retirement income category and into the “excessive”³. Not everyone will perceive this as a problem but it has some undesirable implications, including reduced take-home pay for young families, higher taxes for everyone and an uneven allocation of scarce public funds amongst the most needy. An intelligent re-design of workplace plans can reduce this problem.

This Part 2 of our report on the Canada Pension Plan focuses on the actions that employers should be considering within workplace pension plans in the wake of the CPP enhancement.

³ In this paper, “excessive” income is defined as having significantly more income than is needed to maintain one’s pre-retirement standard of living.

Section 1

A recap of the CPP before and after enhancement

Perhaps the simplest way to describe the change in the CPP enhancement is with charts. Figure 1.1 is a variation of the [chart](#) that appears on the Department of Finance Canada website. It shows that the benefit rate will rise from the present 25 percent of covered earnings to 33.3 percent. The covered earnings ceiling, which would have been about \$72,500 in 2025 without the enhancement, will increase by an extra 14 percent, to about \$82,700. The change in ceiling takes place in two steps in 2024 and 2025.

With the increases in the benefit rate and the ceiling, the maximum CPP benefit will be 50 percent higher than the current

maximum. Since the changes apply only to future service, it will take up to 47 years after 2025 to be totally phased in. Anyone who is retiring now will not be affected.

Figure 1.2 shows how employee contributions to the CPP will rise between now and 2025. (Employers make matching contributions.) The chart is based on average wages rising by about 3 percent a year and is consistent with the federal government’s projections.

Nothing changes before the end of 2018. Between 2019 and 2023, the contribution rate rises in steps from 4.95 percent (each of employee and employer) to 5.95 percent. The increase in the earnings ceiling further increases contributions starting in 2024.

Figure 1.1 - CPP benefit coverage in 2015 - with and without enhancement

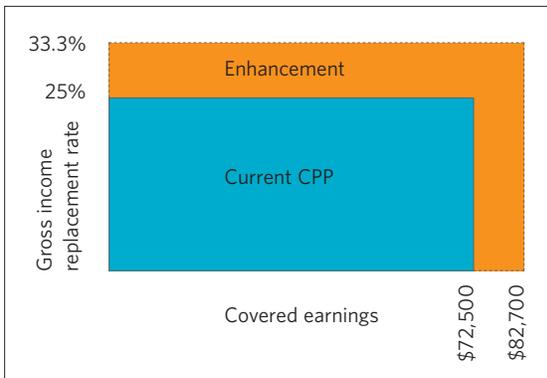
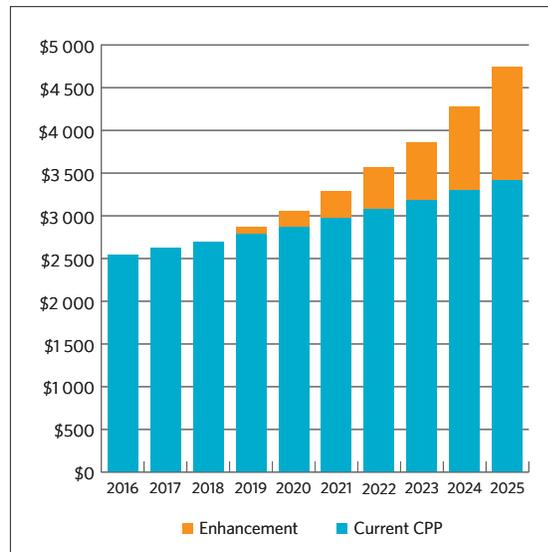


Figure 1.2 - How maximum CPP contributions will change



Section 2

What the CPP enhancement accomplishes

From Part 1 of this report, we know that the CPP enhancement was needed because younger workers face a daunting economic future. Not only will they live longer, they can expect a considerably lower return on their savings.

Special terminology in this section:

Income quintiles: A grouping of the working population by income level. Each quintile holds 20 percent of the population.

Gross replacement ratio: The simple ratio of retirement income (from all sources) divided by final average employment income before tax or payroll deductions.

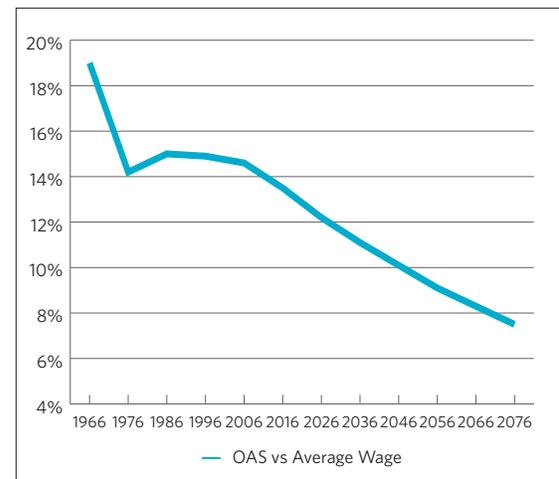
Living Standards Replacement Rate (LSRR): This is an individualized and comprehensive measure of retirement income adequacy developed in MacDonald, Osberg and Moore (2016)*. The goal of the LSRR is to estimate how well a worker's living standards are replaced after retirement and to provide a more accurate alternative to the conventional earnings replacement rate.

YMPE: Maximum pensionable earnings under the CPP.

* Bonnie-Jeanne MacDonald, Lars Osberg and Kevin Moore. (2016). How Accurately does 70% Final Earnings Replacement Measure Retirement Income (In)Adequacy? Introducing the Living Standards Replacement Rate (LSRR). ASTIN Bulletin - The Journal of the International Actuarial Association, 46(3), pp 627-676, DOI: 10.1017/asb.2016.20 (Note: This paper is "open access", meaning that there is no fee to download.)

The slow erosion of OAS pensions in real terms is another key reason why future replacement ratios will be lower. The maximum OAS pension rises with price inflation whereas earnings rise with wage inflation. In the long run, wage inflation tends to outstrip price inflation by 1 percent a year or more⁴. As a result, OAS as well as GIS will replace an ever smaller percentage of the average worker's pay. Over the long-run, the effect is dramatic (see Fig 2.1).

Figure 2.1 - OAS is shrinking in real terms



Below we use preliminary results from MacDonald and Vettese (2016) to show how future retirees would have fared had the CPP not been enhanced. Results are projected out to the years 2070-2074, the first 5-year period when the CPP enhancements will be fully phased in.

Our analysis focuses on middle-income workers, whom we define as people falling within the three middle-income quintiles.

4 In fact, wage inflation in Canada had exceeded price inflation by an average of 1.37 percent per annum since 1923.

Table 2.1 – Average household income before tax (2016)

Quintile 1 (lowest 20%)	\$33,400	The middle income group
Quintile 2	\$60,200	
Quintile 3	\$86,800	
Quintile 4	\$122,900	
Quintile 5 (highest 20%)	\$224,500	

(We will circle back to the lowest and highest income quintiles later on.) Table 2.1 shows current average household income for each quintile⁵.

The average incomes in each quintile might seem high, but that is because we have focused on households of two or more persons. In addition, Table 2.1 includes all sources of income and not just employment earnings.

Using *LifePaths*, we can estimate the long-term retirement prospects of Canadians had the CPP not been enhanced. The

benchmark used for retirement readiness is the Living Standards Replacement Rate (LSRR). Developed in MacDonald, Osberg and Moore (2016), the LSRR compares the income people have available to support their living standards in retirement versus the corresponding income before retirement⁶. To calculate both the numerator and denominator, one subtracts the following from gross income: income tax, payroll deductions, money set aside for retirement, mortgage payments, and child-raising costs.

Most people will agree that the ideal LSRR is 100 percent. Less than that and living standards may suffer in retirement. Much more than that suggests that the individual over-saved before retirement. A LSRR of close to 100 percent produces a more level consumption pattern over one's lifetime.

If 100 percent is the ideal ratio, a little variability around this number has to be considered acceptable. Life is full of events that can disrupt personal spending – day

LifePaths

Imagine being able to track the fortunes of every Canadian over their lifetime. Some will die young and some will live to 100. Some will have high-paying jobs and some will have sporadic employment. Some will save regularly for retirement or participate in workplace plans and some will not. This is essentially what *LifePaths* aims to do: to track all Canadians in order to understand their past and project where they will be at a future date. Developed by Statistics Canada over 25 years, *LifePaths* brings together Statistics Canada's vast amount of data to shed light on the socio-economic experiences of Canadians. Obviously, this micro-simulation tool has to make some simplifying assumptions, especially where data is not available. Still, the end result is a powerful projection tool.

⁵ We consider only economic families of two persons or more. Income includes investment income and government transfers and is shown before tax. Amounts were taken from CANSIM Table 202-0703 which showed constant 2011 dollars and was then adjusted to approximate 2016 dollars.

⁶ The entire LSRR framework is outlined in MacDonald, Osberg, and Moore (2016).

Table 2.2

Living Standards Replacement Rates	
Over 125%	Excessive
75% to 125%	Appropriate
Under 75%	Inadequate

care, mortgage payments, job loss, sickness, extensive home repairs – and yet most people manage to adjust their spending to stay within their means. While the exact breakpoints are a little arbitrary, it is useful to label the various ranges of LSRRs as shown in Table 2.2⁷.

Armed with these definitions, we summarize in Table 2.3 the situation for future middle-income retirees.

Barely half the middle-class (52.2 percent) can expect to end up with retirement income in the appropriate range and that is only because we have defined that range rather loosely. One might well argue that only LSRRs between 85 percent and 115 percent should be considered appropriate in which case only 33 percent of future retirees are projected to have a LSRR in the “appropriate” range in the absence of a CPP enhancement.

Regardless of one’s political leaning, the distribution of future LSRRs in the absence

Table 2.3 – Long-term situation for middle-income retirees if CPP was left unchanged

Situation for middle-income workers retiring in 2070-2074	Percentage of all retirees
Retirees with appropriate replacement rates (75-125%)	52.2%
Retirees with inadequate replacement rates (<75%)	36.4%
Retirees with excessive replacement rates (>125%)	11.4%

Source: MacDonald and Vettese (2016)

of CPP enhancement is sub-optimal. Certainly the 36.4 percent of future middle-income households with inadequate retirement income is a cause for concern but so is the 11.4 percent with excessive retirement income if it was purchased by over-sacrifice during their working-lives. And remember that both of those percentages would be higher if we adopted a narrower definition of “appropriate”.

But how much will the CPP enhancement improve the situation? Table 2.4 provides some guidance on this question.

What is surprising is that the CPP enhancement seems to do so little. While the number of individuals with inadequate retirement income is reduced by 8.7 percent, the proportion of middle-income households

Table 2.4 – Long-term situation for middle-income retirees after CPP enhancement

Situation for middle-income workers retiring in 2070-2074	Percentage of all retirees	Change versus status quo
Retirees with appropriate replacement rates (75-125%)	56.1%	+3.9%
Retirees with inadequate replacement rates (<75%)	27.7%	-8.7%
Retirees with excessive replacement rates (>125%)	16.2%	+4.8%

Source: MacDonald and Vettese (2016)

⁷ These definitions are targeted at retirees from middle-income backgrounds.

with appropriate replacement ratios rises by only 3.9 percentage points since 4.8% of individuals move to the “excessive” retirement income category. If we adopted the range of LSRRs of 85 to 115 percent as appropriate, only 35 percent of future retirees would find themselves in the “appropriate” range.

There are at least three reasons why the impact of the enhancement is so minimal. First, some of the enhanced CPP pension will be clawed back in the form of smaller OAS and GIS benefits. Second, the CPP enhancement will push some people out of the ideal range and into the realm of “excessive” pension. Third, the CPP enhancement is not that big although it is clearly the biggest increase that is politically palatable at the present time.

One way to improve the percentage of the population with appropriate LSRRs is with a massive education campaign to improve financial literacy but that would be costly and would likely result in only a marginal improvement in savings habits. It might even inadvertently increase the percentage in the “excessive” category. Another approach is for the federal government to reconfigure Pillars 1 and 2 but that is simply not in the cards in the near term.

The only practical approach that has a chance of being effective is to redesign workplace pension plans. We will have more to say on this option in Section 3.

Impact for low-income workers

We have asserted in previous publications that workers in the lowest-income quintile are already well-served by our retirement

income system. By this, we mean that their LSRRs are 100 percent or greater for the most part. That situation, however, will deteriorate over time because of the declining importance of OAS and GIS. This is shown in Table 2.5 which summarizes the retirement status for low-income households, once the CPP enhancement is fully phased in.

The reader will note in Table 2.5 that we have re-defined the highest LSRR bracket as “very high” rather than “excessive” in the case of low-income households. Low-income Canadians who experience a rise in living standards after retirement are not generally viewed as having excessive retirement income.

In the distant future, the projections indicate that a distressingly high percentage (27.9 percent) of low-income households will end up with inadequate retirement incomes. Boosting CPP benefits further, however, is not the best vehicle to target low-income Canadians. The likely better solution lies within Pillar 1 – OAS and GIS – although this would require further analysis⁸ and is outside the scope of this report.

Table 2.5 - Long-term situation for low-income retirees after CPP enhancement

Situation for low-income workers retiring in 2070-2074	Percentage of all retirees
Retirees with appropriate replacement rates (85%-125%)	37.0%
Retirees with inadequate replacement rates (<85%)	27.9%
Retirees with very high replacement rates (>125%)	35.1%

Source: MacDonald and Vettese (2016)

⁸ In addition, we add the note that the financial outcomes for low-income Canadians have not been extensively validated within *LifePaths* compared to the modeling of the rest of the population.

Another fix is within workplace pension plans, which can be revamped to achieve a better balance between pre- and post-retirement income for low-income workers. Plan sponsors might want to reconsider the workplace pension benefits they are providing, and the contributions they require, on earnings below the current YMPE. Low-income workers might be better off trading off some pension benefits in return for higher wages. A practical way to put this into effect is to fully integrate the higher CPP benefits and contributions into workplace pension plans.

The CPP enhancement and high-income workers

Public policy debates about pensions tend to ignore high-income workers, whom we will define as those in the top income quintile. In our long-term projections, we find that 18 percent of high-income workers are expected to have inadequate retirement incomes⁹. Workplace pension plans would be an effective way to remedy this shortfall in retirement income.

⁹ For the high-income group, we define “inadequate” as having a LSRR of less than 65 percent.

Section 3

How workplace pension plans will change – general

One might reasonably expect that most employers who sponsor good workplace pension plans would be paring back pension benefits and contributions to offset the CPP enhancement (what we would refer to as “integration” of the increased CPP benefit). A 60-Second Survey conducted by Morneau Shepell in August 2016, however, suggests otherwise.

Responses from 103 Canadian pension plan sponsors indicate that the majority of them are inclined to pursue the “path of least resistance”, one of four options that are described below:

- **Path of least resistance** means making no significant change to workplace pension plans. As a result, there would be an increase in pension benefits to the extent that CPP benefits increase. In the survey, 68 percent of the sponsors of non-union plans and 73 percent of employers with plans for unionized employees indicated that they do not plan to make any significant changes to the workplace plans they sponsor.
- **Full integration** (same overall CPP plus workplace plan benefit) requires a dollar-for-dollar reduction in the benefit under the workplace plan (if it is a DB pension plan) or a dollar-for-dollar reduction in the employer contribution (if the workplace plan is a DC plan). 22 percent of plan sponsors said they would follow this approach for non-union plans and 21 percent in the case of union plans.
- **Partial integration of the higher CPP benefit** entails some reduction in the workplace plan but still results in an increase in overall benefits and contributions. 10 percent of employers with non-union plans opted for partial integration and 5 percent in the case of union plans.
- **Plan termination.** Actually winding up an existing plan is the most draconian possible response to an enhancement in the CPP. Just one respondent said they might terminate their workplace plan for union employees as a result of the CPP enhancement. No such terminations were contemplated in the case of non-union plans.

Special terminology in this section

Integration (of CPP): Here it refers to reducing pensions in the workplace pension plan in order to offset the increase in the CPP benefit.

YMPE: The Year’s Maximum Pensionable Earnings is the current pension ceiling under the CPP. In 2016, it is \$54,900. It rises annually with changes in the average industrial wage.

Flat-dollar plans: Pension plans that pay a fixed dollar amount for each year of service. These are typical arrangements for hourly-paid employees.

DC: Defined contribution (pension plan); the term also includes group RRSPs.

In spite of its apparent popularity, the **path of least resistance** is difficult to justify on purely logical grounds. It materially increases overall pensions and contributions but if such an increase were both affordable and appropriate, one has to wonder why it was not implemented before now.

There are various ways to explain the popularity of the path of least resistance approach:

1. Employers have not yet thought through all the implications of not amending their plans to reflect the CPP enhancement and may eventually change their minds (about remaining passive).
2. Senior management may have wanted to increase pensions or contributions before now but held back because of the prevailing uncertainty about the economy and the outcome of pension reform.
3. Many existing plans are not integrated with the CPP now (this is especially the case of DC plans and flat-dollar plans) so the path of least resistance is simply a continuation of the same policy.
4. The absence of an increase in pensions was not upsetting employees but taking overt action to cut back workplace plan benefits might well be.

If employers truly decide to follow the path of least resistance, it will result in even more Canadian workers retiring with “excessive pensions”, as defined in the previous section. Our micro-simulation shows that one middle-income employee in three who has significant coverage in a workplace plan will end up with excessive pension.

The **full integration** approach makes sense if the current formula was designed to produce a specific level of income replacement, inclusive of CPP. This should be the case, for instance, with step-rate DB pension plans. Full integration also helps to ensure that employees end up in the appropriate range of retirement income. As we will show, however, integration is not an exact science; employers will have to make decisions about how they would implement it.

In the balance of this report, we shift from the general to the specific and analyse how participants in certain types of pension plan will be affected by the CPP enhancement.

Section 4

How workplace plans will change – specifics

In this section we will look at three major types of pension plans and how they are likely to be affected by the CPP enhancement. Even though the plan types are quite different, we will find that some basic principles are common to all plans:

- Ignoring the CPP enhancement may be to the detriment of both employers and employees.
- Perfect integration of the enhanced CPP with existing workplace plans is not possible; approximations will be needed.
- In general, employees will end up receiving more overall pension, even when some attempt at integration is made. This is because integration is an imprecise

exercise and employers will tend to err in the employees' favour.

Case 1

Earnings-based plans that are already integrated with CPP

Consider the pension plan for federal public service employees (known as the Federal PSPP). This is a traditional DB pension plan in the sense that the employees contribute a fixed amount in respect of the current service cost and the employer contributes the rest, including the funding of any deficit. Plans like this are becoming less common even in the public sector¹⁰ but they are still important, especially the Federal PSPP considering that it has nearly half a million plan members!

The Federal PSPP is fully integrated with the existing CPP as it targets a gross replacement ratio of about 70 percent of final average earnings – including CPP but excluding OAS – after 35 years of service. To be more precise, it provides a pension for each year of credited service (up to 35 years) equal to:

**1.375% of FAE5 up to the F5YMPE
+ 2% of FAE5 over the F5YMPE**

Actually, the Federal PSPP formula provides a little more than 70 percent after 35 years of service. An employee with FAE5 of \$75,000 would receive 72.2 percent and OAS would add another 9 percent so that the gross replacement ratio is about 81 percent.

Special terminology in this section

FAE5: Average earnings in the year of retirement and the four previous calendar years.

F5YMPE: Average YMPE in the same 5 years.

TDF: Target-Date Fund, a balanced fund with an equity weighting that is deemed appropriate for participants who are retiring in a certain future period; the longer the time before retirement, the greater the equity weighting.

¹⁰ Public sector plans are increasingly becoming Jointly Sponsored Pension Plans which means that the active members and the employer share equally in both the current service cost and deficits. Examples of JSPPs include OMERS and the Ontario Teachers' Plan.

For a representative participant of such a plan (i.e. a worker with generally steady employment earnings over those 35 years of service, a spouse with a similar earnings and pension history, two children, a home and paid-off mortgage at retirement), an 81 percent gross replacement rate would result in a LSRR in excess of 125 percent.

Unless the Federal PSPP is amended, the same employee would see her total pension rise from 72.2 percent of FAE5 to 79.1 percent once the CPP enhancement is fully phased in. With OAS included, the gross replacement ratio becomes 88 percent.

If the enhanced CPP benefit were to be fully integrated, the benefit rate on earnings below the F5YMPE would have to drop from 1.375 percent down to about 1.125 percent.

Now we consider some of the complications that arise from trying to achieve full integration. The first involves ancillary benefits (survivor, disability and indexing). These ancillary benefits are unlikely to be the same in the workplace plan as in the CPP and this means that integrating the enhanced CPP does not entail a dollar-for-dollar reduction.

Assume, for example, that unlike the Federal PSPP, the pension under the workplace plan was not inflation-protected. If that pension is reduced dollar for dollar due to the increase in the CPP pension, then the employee's overall retirement income protection will have improved since more of his pension is now inflation protected. Using the 1.375%/2% formula again, this would suggest that even

the 1.125 percent rate would be too high. Depending on one's expectations for future inflation, the benefit accrual rate up to the F5YMPE might drop to 1 percent or even less.

One comes to the same conclusion with the other ancillary benefits if they are substantially different. The question is whether employers will reduce workplace pensions by more than one dollar for each dollar of increase in CPP to neutralize the impact of better ancillary benefits under CPP.

Another complication to achieving full integration involves the YMPE. Under the enhancement, the YMPE will continue to be defined in the same fashion until 2024 meaning it will continue increasing in lockstep with increases in the average wage, the same as it has done since the 1980s. In 2024 and again in 2025, the maximum pensionable earnings will be increased to an ultimate level that is 14 percent higher. (Please refer to Section 1 for details.) By 2025, the old YMPE is estimated to be \$72,500 while the new ceiling will be about \$82,700.

Unfortunately, the old YMPE concept must be retained as well as the new higher ceiling. There are two reasons for this.

First, new CPP benefits have to be funded in full (as opposed to the approximately 20 percent funded level of existing CPP benefits) which means they need to be accounted for separately from the existing CPP benefits and this requires maintaining the old YMPE.

Second, the government has decided to provide full tax deductibility of the additional employee contributions resulting from the enhanced CPP formula. (Existing employee CPP contributions will continue to attract only a tax credit.) Once again, this means tracking existing and enhanced CPP contributions separately. Employers will therefore have to keep track of these two items separately in their payroll deductions and in the remittances of contributions they make to the CRA.

Another consideration that will complicate plan redesign is that Quebec is unlikely to adopt the same enhancement for the Quebec Pension Plan as the CPP. Different formulas will further complicate record-keeping and payroll deductions in the case of national employers.

Given the complexities, plan sponsors with earnings-related plans should already be starting to consider how they will be integrating the enhanced CPP.

Case 2 Flat-dollar collectively bargained plans

One of the few areas of DB plans in the private sector that is resisting migration to DC with some success is collectively bargained pension plans. Often, these are flat-dollar plans; for instance, a plan that provides \$50 of monthly pension benefit for each year of credited service.

Obviously, these plans are not explicitly integrated with the CPP. In most cases, however, they are implicitly integrated in the sense that the flat benefit would have been higher had the CPP not existed.

Conversely, the benefit might have been lower had the original CPP benefit been bigger. Should it become lower now?

Consider how a \$50/mo/yr flat-dollar plan might change as a result of the CPP enhancement. We will take the example of an employee earning \$63,000 who is retiring in 2016 after 35 years of service. (We used \$63,000 because that is what the new CPP earnings ceiling would have been in 2016 if it had been implemented sooner.)

Without the CPP enhancement, this person can expect a gross replacement ratio of 65 percent of final earnings, inclusive of OAS and CPP.

Case 2 - Before CPP enhancement

Workplace pension (monthly)	\$1,750.00
CPP pension	\$1,092.50
Total	\$2,842.50

Under the enhancement, the CPP pension would be up to 50 percent higher (or at least it will, once the higher earnings ceiling is phased in; we will ignore the transition period here for the sake of simplicity). If the CPP enhancement had always applied, the same employee would have a gross replacement ratio of 76 percent of final earnings. The LSRR could easily exceed 115 percent.

Case 2 - After CPP enhancement

Workplace pension (monthly)	\$1,750.00
CPP pension (rounded down)	\$1,650.00
Total	\$3,400.00

The parties to the collective bargaining process must decide what to do. Their main options are to:

- a) Apply full integration and reduce future pension accruals by about \$13/mo/yr.,
- b) Ignore the CPP enhancement in which case the gross replacement ratio would rise by 11 percent of final earnings and possibly end up in the excessive range, or
- c) Make no change to the pension plan but instead negotiate a reduction in some other part of the compensation package to reflect the increase in pension.

Again, complications will arise in the implementation and will require careful consideration:

- Not everyone will receive the maximum CPP pension, especially once the pensionable earnings ceiling has been raised so the amount that workplace pensions should be reduced will vary by individual. It will also change as the YMPE changes.
- The ancillary benefits under the workplace plan and the CPP will probably differ, which can affect the appropriate amount of reduction as was explained in Case 1.

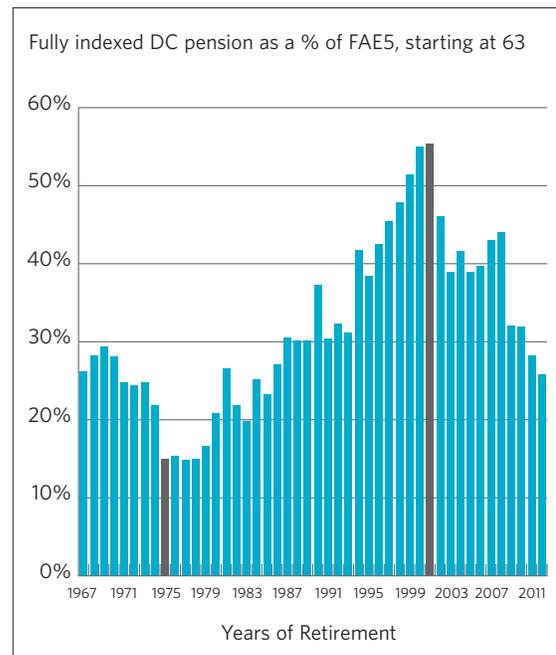
Case 3 DC plans

Like flat-dollar plans, most DC plans are not explicitly integrated with CPP. When DC plans allow for optional employee contributions, they can be considered to be *implicitly* integrated since higher paid employees tend to contribute a higher percentage of pay.

The amount of pension that a given DC formula will produce will vary greatly depending on current interest rates as well as the level of investment returns. This was shown quite graphically using historical returns in Morneau Shepell's *April 2013 Vision* newsletter. A chart from that *Vision* (Figure 4.1) shows that contributions of 8 percent a year for 30 years would have produced a pension of anywhere from 15 percent to 55 percent of FAE5 depending upon when one retired.

As a result, it is difficult to claim that DC plans are precisely calibrated to produce a certain replacement of living standards; the potential retirement income is so volatile. This is yet another reason why such plans are not explicitly integrated with the CPP. It would imply a degree of precision (in targeting a specific benefit level) that is unattainable.

Figure 4.1 - The long-term variability of DC pensions



Source: Morneau Shepell's *Vision/Vettese* (April, 2013)

Nevertheless, the CPP enhancement can result in a change to the contribution formula of DC plans. Below, we will consider the potential impact of the CPP enhancement on one hypothetical DC plan.

In this DC plan, employees are required to contribute 5 percent of pay, which is fully matched by the employer. This level of contributions, if continued over a 35-year period, might produce an annual pension at age 65 of \$25,000 to \$30,000 for someone retiring with final year's earnings of \$80,000 and of course, it could be much more or much less than that. We will assume it is \$27,000 which translates into a monthly pension of \$2,250.

Case 3 - Situation before CPP enhancement

Workplace pension (monthly)	\$2,250.00
CPP pension	\$1,092.50
Total	\$3,342.50

Once we add in the OAS pension, this individual could expect a gross replacement ratio of about 60 percent. Again, if this were a typical individual, this level of gross retirement income would likely provide a LSRR of about 100 percent or more (although we must remember the potential volatility in the amount of pension the DC plan can generate).

Assuming the CPP enhancement was fully phased in, the gross replacement ratio would climb to about 70 percent and the LSRR might surpass 115 percent (barring the financial market risk).

The DC plan sponsor could react to this change in a variety of ways. For instance;

- The sponsor could opt to make no change and live with the additional payroll cost.
- The increase in contributions to the CPP could be offset by an equal reduction in contributions to the workplace plan. Hence, the new contribution formula could become 4 percent of pay up to the new CPP earnings ceiling plus 5 percent over that ceiling.
- The plan sponsor could use this opportunity to reduce required contributions and introduce optional employee contributions with employer matching.

Taking on more risk

The enhanced CPP benefit can change plan design in more subtle ways as well. Current DC participants can take on more investment risk since their floor DB benefit is greater. This higher risk can translate into a higher exposure to equities within the DC plan. We should expect that the equity weighting of TDFs will be changed eventually across all target dates. This will not happen, of course, until the higher CPP pension is well on its way to being phased in.

Now that the DB pension from the CPP is that much bigger, employers might feel they can safely transfer more risk to employees (by converting their DB plans to DC, or to Target Benefit Plans). The CPP enhancement might therefore accelerate the migration away from traditional DB pension plans, though once again, this may not occur for some years yet.

Conclusions

The CPP enhancement was a welcome improvement to our retirement income system but is not enough to narrow the unacceptably wide range of LSRRs for future retirees. Nevertheless, we do not expect to see any further significant changes to Pillar 1 or 2 for the foreseeable future. The best bet for improving retirement outcomes lies with individuals and employers making better use of Pillar 3 vehicles.

Regardless of the type of workplace pension plan that is currently in place, it is important for plan sponsors to review existing pension and contribution formulas – and perhaps even the type of plan – to assess what changes will be appropriate in light of the CPP enhancement.

Appendix

Assumptions underlying the *LifePaths* projections

LifePaths and Key Projection Assumptions

LifePaths is a computer simulation model that combines Statistics Canada's vast amount of data so as to simulate the detailed life-courses of virtual Canadians case by case. These virtual individuals attend school, make educational choices, leave home, form families, migrate, become parents, divorce and remarry, lose and find jobs, earn money, acquire homes, save, pay taxes, contribute to pension schemes, receive benefits and pensions, become disabled, and eventually die. *LifePaths* simulations aggregate to historical data over the past half-century and allow for detailed projections into the future (projections that incorporate the **realistic complexity and diversity** experienced by individuals over their life-courses).

LifePaths is publicly available; an overview of *LifePaths* is available on the Statistics Canada website: <http://www.statcan.gc.ca/microsimulation/lifepaths/lifepaths-eng.htm>.

In MacDonald and Vettese (2016), we carry out our analysis by building on *LifePaths* Model version 5.1.4.5. The assumptions and calculations underlying the simulation results were prepared by the authors and the responsibility for the use and interpretation of these data is entirely that of the authors.

When simulating the past, *LifePaths* uses behavioral equations estimated from historical data, and its simulations produce a representative population that is consistent with available microdata on Canadians and

sums to aggregate statistics. *LifePaths*' simulation of the future requires, however, assumptions and our analysis relies on *LifePaths*' default future projection assumptions:

- an aggregate real wage growth rate of 1.3 percent and inflation rate of 2.3 percent;
- stochastically modeled financial market rates of return for various asset classes, with an overall average real market rate of return of 4.0 percent. After investment costs and other penalties, this works out to an average net real rate of return of 1.4 percent for RRSPs investments and 2.8 percent for defined contribution investments (note that there is variation in the rates of return between simulated individuals for each asset class, as well as differences in portfolio composition);
- housing values grow at a rate halfway between inflation and wage growth;
- a modest trend away from marriage (among all age cohorts, including seniors);
- a flattening out of increasing female labour participation rates and increasing post-secondary education attainment; and
- a modest trend of increasing life expectancy and fewer children across future cohorts according to the medium demographic assumptions for fertility, mortality, and migration from Statistics Canada's official population projections.

To test the future of CPP “status quo”, our projections also assume the following:

- the continuation of public pension program provisions, and payroll and income tax systems, as legislated at the end of 2010;
- a continuation into the future of historical RRSP saving behavior observed over the past decade; and
- the continuation of recently observed registered pension plan (RPP) coverage.

To test the impact of the CPP enhancement, we assume the following in our projections:

- additional CPP benefits and contributions as announced by the Federal government in June 2016, where the additional CPP contributions are deductible for tax purposes;
- employers will bear the burden of new employer CPP contributions (that is, the CPP expansion will not reduce employment earnings); and
- full integration of additional CPP benefits for RPPs already integrated with the C/QPP, and no integration for RPPs already not integrated.

In MacDonald and Vettese (2016), we also assume some behavioral adjustments in response to the CPP enhancement. We assume that those individuals not in an integrated RPP will respond to the CPP enhancements by reducing their RRSP contributions by one third of any new employee CPP contributions (that is,

\$0.33 reduction in RRSP contributions for every \$1 of new employee CPP contribution).

At the employer pension plan level, the default *LifePaths* projection already incorporates the long-term decline in defined benefit plan coverage in the private sector, and we assume that the CPP reform will modestly accelerate this decline and cause more employers to freeze or terminate existing employer pension plans. The overall feedback modeled is an aggregate downward trend in employer pension plan coverage (more specifically, over the next 20 years, peak life-cycle annual RPP coverage in the private sector will fall by roughly 20%.)

Measure of Retirement Income Adequacy

The central measure of retirement income adequacy in MacDonald and Vettese (2016) is the Living Standard Replacement rate (LSRR). Developed and outlined in MacDonald, Osberg and Moore (2016), the LSRR aims to provide a more accurate alternative to the conventional gross final earnings replacement rate.

The goal of the LSRR is to capture a worker’s living standards continuity after retirement, by calculating how much money a worker has to spend on his/her personal consumption of goods and services before and after retirement.

To calculate the denominator of the LSRR, MacDonald and Vettese (2016) follow the approach taken in Moore, Robson and Laurin (2010) and use the best 15 years between

ages 35 and 60, updated using the CPI. They similarly also use age 70 living standards as representative of living standards in retirement.

**Living Standards Replacement Rate (LSRR)
= Age 70 Retirement Living Standards**

**Best 15 Average Working-life
Living Standards**

During the working-years, living standards are estimated using the money available to support individual consumption, which equals his/her family's disposable income (gross income after taxes and transfers) less net savings, and then adjusted for family size (using the Luxembourg Income Study (LIS) equivalence scale, which is the square root of household size).

During retirement, living standards are similarly estimated using the money available for individual consumption, which would equal disposable income plus the drawdown from accumulated savings (also calculated at the family level and adjusted for family size). (See Figure 1 in MacDonald, Osberg and Moore (2016) for more details on how the income flows fit together when computing living standards).

MacDonald and Vettese (2016) incorporate all major sources of income available to support consumption. During the working years, this includes: employment earnings, income and payroll taxes, implicit return on housing equity, and savings towards RPPs, RRSPs, primary housing, and other savings¹¹ (non-registered financial assets, real estate assets other than primary housing, business equity, inheritance received, and debt).

The retirement income available to support individual consumption includes government public pension benefits (Canada/Quebec Pension Plan benefits, Old Age Security, and Guaranteed Income Supplement), employer pension plan benefits, registered and non-registered financial wealth income flows, housing wealth flows, and taxes. At age 65, DC accounts are converted into a nominally fixed annuity (that are priced using prevailing current group annuity price rates) and people are assumed to draw down all other savings (including 50% of their housing equity) equally until age 85 (which is roughly equal to life expectancy). Given that Canadians tend not to annuitize or otherwise draw on most of their housing equity, these drawdown assumptions aim to capture how much money people could potentially consume given their financial resources, while keeping in mind actual drawdown behavior; the intention is to produce a balanced assessment of retirement income adequacy.

¹¹ The modeling of "other savings" in *LifePaths* is a relatively new feature, and was not a part of the Moore, Robson and Laurin (2010) study.

The authors

Frederick Vettese is Chief Actuary of Morneau Shepell. In 2012, he co-authored “The Real Retirement” with Bill Morneau. In 2015, Fred published his second book, “The Essential Retirement Guide: A Contrarian’s Perspective”.

Bonnie-Jeanne MacDonald is a Fellow of the Society of Actuaries and an academic researcher in Halifax, Canada. Her research focuses on financial security for an aging population. Building on best practices from the academic world, while combining innovative research with industry need, her goal is to improve the retirement financial security of people in practice (and not just in theory).

Bonnie-Jeanne received the 2001 Gold Medal in Actuarial Science (Hon BSc) at the University of Western Ontario in Canada and a PhD in Actuarial Mathematics at Heriot-Watt University in Scotland. In 2011, she was selected as one of the top ‘young economists’ by the Canadian government to attend the Lindau Nobel Laureate Meeting in Germany.

Her work on the Living Standards Replacement Rate (LSRR) won the 2014 Pension, Benefits and Social Security Scientific Committee Award Prize for Best Paper at the 30th International Congress of Actuaries in April 2014. Bonnie-Jeanne will present the LSRR in a webinar on November 17, 2016 entitled “Replacing the Replacement Rate: How much is “ENOUGH” retirement income?”:

<https://www.ActexMadRiver.com/ContinuingProfessionalDevelopment.aspx>

Other contributors to this paper include Serge Charbonneau, Andrew Fung, Ed Lee, Kevin Milligan, Kevin Moore, Francine Pell and Emily Tryssenaur.

Morneau Shepell is the only human resources consulting and technology company that takes an integrative approach to employee assistance, health, benefits and retirement needs. The Company is the leading provider of employee and family assistance programs, as well as the largest administrator of retirement and benefits plans and the largest provider of integrated absence management solutions in Canada. Through health and productivity, administrative, and retirement solutions, Morneau Shepell helps clients reduce costs, increase employee productivity and improve their competitive position. Established in 1966, Morneau Shepell serves approximately 20,000 clients, ranging from small businesses to some of the largest corporations and associations in North America. With almost 4,000 employees in offices across North America, Morneau Shepell provides services to organizations across Canada, in the United States, and around the globe. Morneau Shepell is a publicly-traded company on the Toronto Stock Exchange (TSX: MSI)

morneaushepell.com



@Morneau_Shepell



Morneau Shepell

