The Social Implications of Pensions

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Executive Summary

This paper examines how defined benefit (DB) pension plans affect their members, local communities and Canadian taxpayers.

This analysis shows these plans are not just better for Canadian workers, but for the Canadian economy overall, with cost savings to employers and governments because of DB plans' positive impacts: better labour force management, lowered job stress, improved worker health and lower use of government-funded assistance programs—old age security (OAS), the guaranteed income supplement (GIS), and other discounts and subsidies for low-income retirees in Canada (e.g., BC Medical Services Plan premium subsidies). Canadian pensioners with stable, predictable DB retirement income are less dependent on government assistance, and they spend their pension dollars in local businesses.

Canadians with DB plans provide wide ranging economic benefits to many.

Introduction

The Canadian pension and retirement landscape is marked by four distinct retirement savings experiences:

- Defined benefit workplace pension plans
- Defined contribution (DC) workplace pension plans
- Individual retirement savings, such as private investments, tax-free savings accounts (TFSAs) and registered retirement savings plans (RRSPs)
- No formal retirement savings

The relative efficiency and effectiveness of each method are profoundly different. The differences result in meaningful social impacts that require investigation.

According to the latest (2018) Statistics Canada data, 37.5 per cent of Canadian workers have workplace pensions or retirement savings plans. Within this group, 25.2 per cent have a DB plan, 6.7 per cent have a DC plan and 5.6 per cent have "other."[1]

Of those working in the public sector, 88.0 per cent have a workplace pension plan. Of these, 80.0 per cent have a DB plan, 4.0 per cent have a DC plan and 4.0 per cent have "other."

Of those working in the private sector, 23.0 per cent have a workplace pension plan. Of these, 9.5 per cent have DB plans, 7.5 per cent have DC plans and 6.0 per cent have "other."[2]

There is consistent evidence that DB plans are the best option for providing Canadians with reliable, predictable income security during retirement. DB plans are professionally managed with low expense ratios and can carry the longevity risk. This is because DB plans are sufficiently large enough that risks are spread out over many people and unknown life expectancy factors, while important, add only slightly to overall risks.

1 Statistics Canada, "Pension Plans in Canada, as of January 1, 2017," The Daily, June 27, 2018.
2 Ibid.

DB plans mitigate longevity risk

Longevity risk affects all Canadians. Longevity risk is growing with increasing life expectancy and can result in retirement payouts that are higher than what individuals, companies, pension funds or governments may have originally accounted for.

The Royal Bank of Canada Insurance Inc. reported that 62 per cent of Canadians are concerned they will outlive their retirement savings. Individual workers in DC plans, and those saving through RRSPs and TFSAs, shoulder their longevity risk exclusively. Since funding is finite and no one knows exactly how long they will live, the possibility of running out of savings can sneak up on seniors when they are least able to do something about it.

Yet as few as one in 10 Canadians say they are using or plan to use annuities to help manage their longevity risks.[3] Do they not understand longevity risk? Are the administrative fees or low-risk investment strategies putting them off purchasing annuities? Or do they just not want to think about their own mortality?

People with DB plans are less stressed about their finances and freer to spend their dollars as they don't need to worry about outliving their savings; their basic pension will be paid each month until they die, whether that's 10 years away, 40 years or beyond. Further, through pooling of the longevity risk, DB plans are more efficient and less risky.

DB plans promote worker well-being

Financial stress can affect health and workplace productivity. Diane Oakley, executive director of the National Institute on Retirement Security, reported that firms moving from DB to DC plans experienced noticeable productivity losses compared to firms that kept their DB plans. Employees in DB plans are more committed to their work and invest more in their own skills.[4]

In its 2017 Global Benefits Attitudes Survey, Willis Towers Watson indicated that over 40 per cent of employees are dealing with both health challenges and financial worries, which affect their performance at work. This group has the highest rates of absence, presenteeism and stress, and are the least engaged—35 per cent are disengaged and only 25 per cent are highly engaged. This ultimately drags down productivity. Nearly one-third of employees in this group plan to work to age 70 or later.[5]

These insights into employees' financial stress suggest that employers may be able to harness their workplace pension as a productivity booster. Employers should take a second look at the design and type of plan when performing a cost–benefit analysis of their workplace pension plan program. DB plans are the most efficient way of delivering the greatest pension income per dollar of contribution. Being in a DB plan reduces one's stress about financial planning, which reduces health benefit costs and boosts employee engagement and productivity.

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3 "Nearly half of Canadians are worried they won't have enough money to live a full lifestyle in retirement," Royal Bank of Canada, January 2018.

4 Diane Oakley, "Attracting and Retaining a Qualified Public Sector Workforce," (presentation, National Conference of State Legislatures Legislative Summit, National Institute on Retirement Security, 2017).

5 "2017 Global Benefits Attitudes Survey," (Willis Towers Watson, November 2017).

Canadians want DB pensions—and they are willing to pay for them

Canadians want the benefits and features DB plans offer. In 2016, the Canadian Public Pension Leadership Council commissioned Ipsos Reid to survey 1,000 Canadians from across the country on their thoughts and attitudes toward retirement. The survey results demonstrate that modern DB plans provide what Canadians want: an efficient, lower-stress retirement income solution.

Survey respondents indicated they were willing to meaningfully contribute their income for features associated with modern DB plans, such as predictable retirement income guaranteed for life. This was true for all age and income groups, including younger respondents in the 18–34 age range.

DB plans are under attack

Despite the evidence that DB plans deliver higher and more efficient income security during retirement, these plans have fallen out of favour in the private sector in the last few decades. Reasons include rigorous regulations and accounting rules, and volatile costs that must be maintained regardless of how the company is performing. These days, if private sector employers provide a retirement scheme at all, it is likely a DC plan. However, it's clear that insufficient personal savings in DC plans, coupled with mediocre economic growth in a low-interest-rate environment, will not deliver the retirement income many employers and employees expect. Despite longevity improvements and lower interest rates, there have been little or no changes in contribution levels in DC plans. Canada and Canadians lack awareness on the net impact these factors will have on their standard of living in retirement. One can ask, "How well is the DC model working?"

DB plans are still common in the public sector and advocated for by labour unions and public sector administrators who understand the overall long-term benefits of DB plans. But this creates a divided and inequitable retirement landscape. Instead of seeking DB plans for more Canadians, taxpayer advocacy groups and conservative think tanks criticize DB plans as being overly generous and push for conversion to less-efficient DC plans.

In fact, public sector DB plans are not overly generous. Let's look at two examples from British Columbia. BC's Municipal Pension Plan is the largest public sector plan in that province. As at December 31, 2017, the average annual pension in pay was $17,527, and the median annual pension in pay was $12,438. In BC's Teachers' Pension Plan, as at December 31, 2017, the average annual pension in pay was $30,538, and the median annual pension in pay was $30,522. While employers contribute to these plans, workers contribute roughly the same amount: between 10 and 12 per cent of each paycheque.

Summary of findings

DB pensioners reduce strain on government coffers

Every dollar paid out at retirement from a pension plan is taxable income and those with DB plans pay more taxes (see full report, Table 2).

Pensioners with DB pensions are also less likely to receive assistance from taxpayer-funded programs such as the GIS, and many of these pensioners also have part or all of their OAS payments adjusted, saving taxpayers billions of dollars. Also, DB pensions reduce the annual GIS payout by approximately $2–3 billion annually.[6]

For example, 54 per cent of workers who had no workplace pension received GIS benefits compared to only 17 per cent of those with a workplace pension.

Workers who save nothing may have no source of individual retirement income and live on the lowest annual income equal to the total of their OAS, GIS (paid for by Canadian taxpayers) and Canada Pension Plan. They suffer the double whammy of having low spending power and having a low benefit to live on. Further, those with lower income in retirement typically use publicly funded health care more than those with adequate retirement income.[7]

DB plan design provides pensioners with more income

This paper examines the experience of workers with different kinds of retirement income. The analysis shows a huge advantage for workers in a DB pension plan compared to those saving for retirement using individual savings programs such as RRSPs. A worker in a DB plan contributes the same amount as a worker in an RRSP savings program but receives a pension amount in retirement that can be 2.2 times greater.

The analysis also shows that the highest income replacement ratios are achieved by those in a DB plan at any earnings level. The highest income replacement ratio is 90 per cent for a worker earning $40,000 a year (but taking home $36,000 net of pension contributions) and participating in a DB pension plan for 30 years. (It should be noted that these replacement ratios decline as earnings levels rise.) The lowest replacement ratio for the $40,000 level is 50 per cent; it is realized by the worker who does not save for retirement. The RRSP saver lies in between these two extremes. The non-saver has the lowest replacement ratio at all earnings levels and must rely on government assistance—a cost to taxpayers.

DB pensioners support their local communities and economies

Pensioners with stable, predictable income spend their monthly pension dollars in their communities, supporting local businesses and economies. For example, in its 2015 report, *Assessing the Economic Impacts of Pension-Income Spending in British Columbia*, Urban Futures Institute determined the economic impact of pension income spending from BC public sector pensions on provincial gross domestic product was $1.66 billion and total government

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6 *Defined Benefit Pension Plans: Strengthening the Canadian Economy*, (Ontario Teachers' Pension Plan, October 2013).
7 Nyce, Steve, "Now is the time to tackle financial well-being," *Willis Towers Watson Wire*, March 8, 2018.

tax revenue from BC public sector pension income spending was $310 million. The economic impact for BC was determined to be as strong as the forestry and logging industry.[8]

Employers with DB plans have better employee attraction, engagement and retention

Employers who offer DB plans are shown to be successful at attracting and retaining workers. Workers who have DB plans and understand how their plans work experience reduced stress and improved engagement and productivity. DB plan members are also more likely to stay on with an employer for the long term.

Final thoughts

Despite the introduction of DC plans, RRSPs and a variety of financial products, DB plans remain the best way to save for retirement. Canadians want the features offered by DB plans, and they are willing to pay to get them. We know people save more for retirement when they contribute to DB plans. We also know that expense ratios are lower, longevity risks are managed and pooled investments provide consistently high investment returns. The case is strong for members, employers, and Canada.

The question is not whether public sector workers should continue to have DB plans; the question is why don't all Canadians have them?

The question is not whether public sector workers should continue to have DB plans; the question is why don't all Canadians have them?

8 *Assessing the Economic Impacts of Pension-Income Spending in British Columbia,* (Urban Futures, July 2, 2015).

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Teachers' Pension Plan 2017 Annual Report. Victoria: BC Pension Corporation, 2018.

"Nearly half of Canadians are worried they won't have enough money to live a full lifestyle in retirement." Royal Bank of Canada, January 2018.

Statistics Canada. "Pension Plans in Canada, as of January 1, 2017." The Daily. June 27, 2018.

Full Report

The number of Canadian workers enrolled in defined benefit (DB) pension plans has been declining since the turn of the century. Onerous regulations and accounting rules governing private sector pensions have made required contributions unpredictable, creating significant financial uncertainty for plan sponsors. Together with valuation requirements, this uncertainty has suppressed the feasibility of pensions. The dwindling number of DB plans will, in time, have grim consequences for the retirement financial security of individual workers and put stress on government social programs.

This paper will examine the social implications of the decline in DB plan coverage.

Many private sector plan sponsors have shifted to defined contribution (DC) arrangements or group RRSPs, or offer no workplace savings program, effectively transferring investment and longevity risks to individuals and ultimately to social programs when savings fall short or run out. Public sector employers typically have stable employment relations and have continued to use DB pensions to attract and retain employees, especially where recruiting and training costs are high.

According to Statistics Canada, 37.5 per cent of paid workers have a workplace pension. Within this group, 25.2 per cent have a DB plan, 6.7 per cent have a DC plan and 5.6 per cent have an "other" savings arrangement. In contrast, in the public sector, 88.0 per cent of paid workers have a workplace pension. Of these, 80.1 per cent have a DB plan, 4.0 per cent have a DC plan and 4.0 per cent have "other." Finally, in the private sector, 23.0 per cent of workers have a registered pension plan. Of these, 9.5 per cent have DB plans, 7.5 per cent have DC plans and 6.0 per cent have "other."[1]

It is common to hear critics complain about how taxpayers are funding "gold-plated" pensions for public service employees, while they must save for their own retirement. While the total pension contributions can be between 20 and 25 per cent of payroll, the image created is unfair as most of these plans' costs are shared equally with employees. At 10–12 per cent of payroll, the overall benefits and positive social impacts are considerable and often overlooked.

The question implied is should the public sector be moving to a DC plan standard, or should the private sector be moving to a DB pension standard? While a good DB pension plan may appear expensive, it creates significant cost savings to employers and to the public purse that go unnoticed and unquantified.

This paper presents examples of the cost savings that result from pensioners receiving adequate retirement income from DB pension plans. These cost savings exist because of the impact DB plans had on labour force management, job stress, worker health and the use of social supports such as old age security (OAS), guaranteed income supplement (GIS), and other discounts and subsidies for low-income retirees in Canada (e.g., BC's Medical Services Plan premium subsidies).

1 Statistics Canada, "Pension Plans in Canada, as of January 1, 2017," *The Daily*, June 27, 2018.

Savings in DC plans and RRSPs can lessen the need for these government programs; however, income in retirement from these systems can be paid in a way that the member can still maximize taxpayer-funded cash flows from OAS and GIS.

It is becoming clear that insufficient personal retirement savings along with mediocre economic growth in a low-interest rate environment will not deliver the adequate retirement income from DC plans that many employers and employees had hoped, prompting questions about how well the DC model is working. Given that contributions are tax-deductible, it would be in everyone's interest to maximize the pension amount payable per dollar of contribution, which results in deferred taxes—especially with Canada's aging population and tax-funded health system.

Enrolment in a sustainable DB plan means plan members know what their retirement income will be, freeing disposable pre-retirement income to be spent on consumption. In retirement, it pays a guaranteed income stream to the retiree that is taxable and can be spent on consumption, which stimulates the Canadian economy. Conversely, members of DC plans and other retirement saving arrangements tend to have lower income in retirement and may be hesitant to spend it because of fears of outliving their savings. A recent Royal Bank of Canada survey shows that only one in 10 Canadians say they are using or planning to use life annuities for retirement.[2]

DB pensions are also shown to reduce stress, improve engagement and ease management workforce transitions, furthering the social benefits of pensions.

Labour force management: attraction and retention

DB pensions result in lower employee turnover and less disruption to productivity. This is supported by Canadian data from the 2017 Willis Towers Watson survey, which found that 72 per cent of new hires at companies sponsoring DB plans said that the retirement program gave them a compelling reason to stay on the job.[3] Without compensation deferred into the future, employees have fewer economic incentives to stay, and turnover increases, resulting in costly hiring and retraining expenses. Oakley states that DB coverage increases tenure by four years compared to no plan and by 1.3 years compared to a DC plan.

As for retention and the ability to "manage" retirement decisions, DC plans seem to do the opposite. According to Brown and McInnes, employers with DC plans may be buffeted more by business cycles than those with DB plans.[4] Employees may hang onto their jobs longer or leave earlier in a manner that is not in the best interests of the employer during booms and busts. Employees may be tempted to leave at the very time employers have a greater need for their labour (e.g., during rapid economic expansion with high investment returns). Conversely, they may stay during economy downturns when their account balances are low and employers might like to reduce their workforce—requiring additional severance

2 RBC Insurance, "Nearly half of Canadians are worried they won't have enough money to live a full lifestyle in retirement," January 28, 2018. Accessed October 10, 2018.

3 Willis Towers Watson, "*2017 Global Benefits Attitudes Survey,*" 2017.

4 Robert L. Brown and Craig McInnes, "Shifting Public Sector DB Plans to DC: The experience so far and implications for Canada," Canadian Public Pension Leadership Council, October 2014.

costs. One example of this is the U.S. Federal Employees Thrift Savings Plan individual DC accounts; at the time of the 2008/09 financial crisis, the rate of employee retirement dropped from 20 to 15 per cent.[5]

Another example often cited involves the Town of Palm Beach, Florida.[6] In 2012, the Palm Beach Town Council decided to close its existing DB pension plan for employees, including police and firefighters. Instead, they offered a stacked "combined" retirement plan with very low DB benefits and a new individual accounts DC plan. This resulted in a mass exodus of 100 public safety employees over four years to neighbouring employers with DB plans. The town experienced increased costs for overtime while vacancies were being filled and for training. In 2016, the town reconsidered the changes, abandoned the DC plan and went back to a DB system.

We can see that, because pensions play an important role in public sector compensation, freezing or closing DB plans and shifting to DC accounts may hamper the ability of public employers to recruit and retain qualified workers.

The transition to DC plans may have reinforced a shift to workers retiring later. A report by the Canadian Institute of Actuaries indicates the age of withdrawal from the labour market rose in Canada between 2000 and 2009—63.4 for men and 62.2 for women in 2009 compared to 62.7 and 60.8, respectively, in 2000.[7] By 2016, the old-age labour force participation rate was 14 per cent in Canada compared to 8 per cent in 2006.[8] Old-age labour force participation rates have risen across most developed countries as saving for retirement becomes more challenging with two financial crises in the past 20 years and persistently low rates of investment returns.[9]

The baby boomer generation may be approaching retirement, but many continue to work instead of choosing a traditional retirement path. Some have not saved enough for retirement and cannot afford to stop working, while others simply enjoy their jobs and see no reason to retire based on age alone.

Employers generally value the experience that senior workers bring to their enterprises. Too many retirements in a short time can drain companies of useful knowledge and resources.

Employers also understand that higher costs are inevitable with an older workforce through higher salaries and other employee benefits, such as increased vacation time and potentially higher health care costs.[10]

DB pension features provide a better path for the attraction and retention of new hires, and the withdrawal from the workforce of retirement-age workers.

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5 Diane Oakley, "Attracting and Retaining a Qualified Public Sector Workforce" (presentation, National Conference of State Legislatures Legislative Summit, National Institute on Retirement Security, Atlanta, 2012).

6 Oakley, "Retirement Reform Lessons: The Experience of Palm Beach Public Safety Pensions" (National Institute on Retirement Security, February 2017).

7 "Issues Related to Increasing the 'Retirement Age'" (Canadian Institute of Actuaries, May 2013).

8 "2017 Global Benefits Attitudes Survey."

9 "2017 Global Benefits Attitudes Survey."

10 "Employers Prepare For Higher Benefit Costs From Older Workers," *MoneyTips,* March 1, 2016.

Impact of DB public sector plans on taxpayers

Taxpayers contribute to Canadians' retirement funds no matter what. They contribute to Canada Pension Plan (CPP) and pay municipal, provincial and federal taxes. In exchange, most Canadians will draw a CPP pension when they retire, and may require OAS and GIS, depending on their financial situations.

Public sector employees are paid through tax dollars, and part of their overall compensation usually includes access to a pension plan, most likely DB. Both public sector employees and their employers contribute to the plan each paycheque. DB plans are still common in the public sector and advocated for by labour unions and public sector administrators who understand the overall long-term benefits of DB plans.

However, this creates a divided and inequitable retirement landscape between the public sector, which still has DB plans, and the private sector, where DB plan coverage is shrinking. Instead of seeking DB plans for more Canadians, taxpayer advocacy groups and conservative think tanks criticize DB plans as being overly generous and push for their conversion to DC plans.

Yet public sector DB plans are not overly generous. Let's look at two examples from British Columbia. BC's Municipal Pension Plan is the largest public sector plan in that province. As at December 31, 2017, the average annual pension in pay was $17,527, and the median annual pension in pay was $12,438.[11] In BC's Teachers' Pension Plan, as at December 31, 2017, the average annual pension in pay was $30,538, and the median annual pension in pay was $30,522.[12] While employers contribute to these plans, workers contribute roughly the same amount: between 10 and 12 per cent each paycheque (for Teachers' members, 12.92 per cent as at January 1, 2018).

Critics of DB public sector plans fail to think through what may happen if they get their wish. If public sector DB plan are converted to DC plans, the knock-on effects could be significant—not only to public sector employee attraction and retention, but also in the risk it creates of even more Canadians being inadequately prepared financially for retirement and becoming more dependent on government assistance.

Impact of DB plans on employee stress, health and productivity

Royal Bank of Canada Insurance Inc. reports that 62 per cent of Canadians are concerned they will outlive their retirement savings.[13] Despite having various financial tools in place, such as RRSPs and TFSAs, 45 per cent are still not confident they will be able to afford the retirement lifestyle they want. This creates stress for these workers, which is of concern to employers, and makes them cautious consumers in retirement as they guard against depleting their savings, which is of concern to the Canadian economy.

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11 *Municipal Pension Plan 2017 Annual Report*, (Victoria: BC Pension Corporation, 2018).

12 *Teachers' Pension Plan 2017 Annual Report***,** (Victoria: BC Pension Corporation, 2018).

13 "Nearly half of Canadians are worried they won't have enough money to live a full lifestyle in retirement," *Royal Bank of Canada*, January 2018.

In a paper analyzing the 2016 Canadian Public Pension Leadership Council (CPPLC) survey of over 1,000 working Canadians, Baldwin noted:

> …average scores of the DB plan members were higher than the DC plan members and group RRSP members with respect to their confidence in achieving their objectives. The portion of DB plan members who ranked their confidence in the top three levels with respect to achieving both retirement age and income objectives is more that 20 percentage points higher than it is for participants in the other types of plans.[14]

…average scores of the DB plan members were higher than the DC plan members and group RRSP members with respect to their confidence in achieving their objectives.

Baldwin concludes that members of DB plans are more confident and knowledgeable and experience less stress than their colleagues in other savings arrangements. Most importantly for employers, DB plan members also express less concern than group RRSP members about the impact of retirement planning on their health and work lives.

Consistent with these findings, Baldwin notes that among workplace pension plan members, DB members express less concern about retirement planning than DC members and are twice as likely (22 versus 11 per cent) to have a written retirement savings plan than those without a workplace pension. DB plan members know what their pension will provide and have a better idea of how much they need to save to augment their retirement income.

They are also less likely to seek employment after they retire from their current job and less likely to do so for financial reasons. DB plan members were nearly one-and-a-half times more likely than DC plan members to see their workplace pension plan as the most important source of retirement income. DB plan members are two-and-a-half times more likely than group RRSP members to identify workplace pension as the most important source of retirement income.[15]

The greater confidence of DB plan members in achieving their objectives and the greater reliance they place on their workplace pension is achieved with a level of stress that is less by a small, but persistent, amount compared to DC plan members. DB plan members express less concern than group RRSP members about the impact of retirement planning on their health and work lives. DB plan members also express higher levels of self-assessed knowledge of retirement income sources.

The results of the CPPLC survey showed that workers value being able to maintain their standard of living in retirement. The ratings for an income that is guaranteed for a lifetime and predictable, and keeps pace with inflation were particularly high, with 97 per cent support. This is more readily achieved with DB pensions than with any other savings arrangement. Finally, a 2016 CPPLC survey indicates that 90 per cent of Canadians would be willing to pay more to guarantee retirement income that is secure and paid for the rest of their life.[16]

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14 Baldwin.

15 Bob Baldwin, "The Pensions Canadians Want: Results of a National Survey" (report on a survey prepared for the Canadian Public Pension Leadership Council), *Benefits Canada*, April 13, 2017.

16 Derek Dobson, "Sounding Board: Modern defined benefit plans combine the best of DB and DC pensions," *Benefits Canada*, May 24, 2017.

The CPPLC survey found that 47 per cent of Canadians report high stress about running out of money after retirement. In addition, 51 per cent of Canadians report retirement-planning stress has a medium to high impact on their work. All generations share these concerns. Millennials (59 per cent) are almost as willing to pay more out of their wages for a more secure retirement benefit as baby boomers (66 per cent) and Gen Xers (63 per cent).[17] Most surprising, younger Canadians are also very willing to contribute meaningfully to their retirement. Fifty-three per cent of Canadians aged 18 to 24 said they would pay 10 per cent or more of their annual income to pension and retirement savings so they could retire and maintain the same standard of living.

Financial stress can affect health and workplace productivity. Oakley reports that firms moving from DB to DC plans experienced productivity losses compared to firms that kept their DB plans.[18] Employees in DB plans are more committed to their work and invest more in skills crucial to effective work.

A study by Manulife on health and wealth found that 92 per cent agreed that financial issues are intricately woven into people's lives and problems; 74 per cent said financial challenges affect emotional health, while 46 per cent said they affect physical well-being; and 50 per cent of the time, when people seek support, financial issues are part of the underlying issue.[19]

The Canadian Payroll Association highlighted results from its National Payroll Week Employee Survey. The results show that working Canadians are experiencing a high level of financial stress, ultimately affecting their work performance, and too few are keeping a close eye on their finances.[20] Financial stress affects both mental and physical health, which can affect workplace productivity.

Using data from a worldwide Willis Towers Watson survey, Steve Nyce reported that employee financial satisfaction declined significantly across many countries in 2017—after several years of improvement—and that there is a clear impact. Over a quarter of employees report their financial problems have a negative impact on their lives, including their ability to focus on saving for retirement.[21]

The effect in the workplace is real. Employees troubled by their finances are twice as likely to be in poor health as those who declare themselves financially unworried. They also report considerably higher stress levels, more absence and "presenteeism." Ultimately, there is a huge drag on productivity.

Among workers who are struggling, high levels of disengagement could persist well into old age, as many of them cannot afford to retire. In developed economies, over 60 per cent of financially struggling workers aged over 50 would like to retire as soon as possible. Yet, despite being the most eager to retire, around half of these employees expect to be working

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17 Derek Dobson, "Can pension plans boost productivity?" *Canadian HR Reporter*, October 2017.

18 Diane Oakley, "Attracting and Retaining A Qualified Public Sector Workforce," (presentation, National Conference of State Legislatures Legislation Summit, National Institute on Retirement Security, 2017).

19 Lisa Callaghan, "Sounding Board: Mental-health approach key to helping employees tackle financial issues," *Benefits Canada*, February 8, 2018.

20 "Survey: Half of workers say financial stress impacts work performance" (Canadian Payroll Association, 2017), *Cision,* November 6, 2017.

21 Steve Nyce, "Now is the time to tackle financial well-being," *Willis Towers Watson Wire*, March 8, 2018.

into their 70s, which could result in a substantial group of discouraged and disengaged older workers. The likelihood of "hidden pensioners" was one reason for the birth of DB pension plans.

The Willis Towers Watson survey indicates that over 40 per cent of employees are dealing with both health challenges and financial worries, and it is detracting from their performance at work. This group has the highest rates of absence, presenteeism and stress, and are the least engaged—35 per cent are disengaged and only 25 per cent are highly engaged. This ultimately drags down productivity. Nearly one-third of employees in this group plan to work to age 70 or later.[22]

These insights into employees' financial stress suggest that employers may be able to harness their workplace pension as a productivity booster. Employers should take a second look at the design and type of plan when calculating the cost–benefit analysis of their workplace pension program. Employers without a workplace pension should consider whether offering a pension or retirement savings plan could increase their workplace productivity and improve attraction and retention. DB plans are the most efficient way of delivering the greatest pension income per dollar of contribution.

Being in a DB plan reduces one's stress about financial planning, which reduces health benefit costs and boost employee engagement and productivity.

Impact on pre- and post-retirement spending

Richard Shillington of Tristat Resources found that roughly half (47 per cent) of those aged 55–64 have no accrued employer pension benefits. The vast majority of these Canadians retiring without an employer pension plan have totally inadequate retirement savings—the median value of their retirement assets is just over $3,000. Roughly half have savings that represent less than one year's worth of the resources they need to supplement OAS/GIS and CPP/QPP. Fewer than 20 per cent have enough savings to support the supplemented resources required for at least five years.[23]

Guaranteed retirement income streams, including DB pension benefits and social security (OAS and CPP/QPP), help stabilize consumption during economic downturns. In contrast, retirement income from DC accounts is pro-cyclical, increasing during growth periods and decreasing during economic downturns. This can have a destabilizing effect on national and local economies.

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22 "2017 Global Benefits Attitudes Survey."

23 Richard Shillington, "An Analysis of the Economic Circumstances of Canadian Seniors" (Broadbent Institute, February 2016).

DB pensioners support their local communities and economies

Pensioners with stable, predictable income spend their pension dollars in their communities, supporting local businesses and economies. For example, in a 2015 report, *Assessing the Economic Impacts of Pension-Income Spending in British Columbia,* Urban Futures Institute determined the economic impact of pension income spending from BC public sector pensions on provincial gross domestic product was $1.66 billion and that total government tax revenue from BC public sector pension income spending was $310 million. The economic impact for BC was determined to be as strong as the forestry and logging industry.[24]

On a more microeconomic basis, a study by the Boston Consulting Group commissioned by four of Ontario's biggest pension plans and reported in Ontario Municipal Employees Retirement System (OMERS) looked at the relationship between pension income and the health of communities.[25]

The 2012 study found that on average 14 cents of every dollar of income in Ontario communities comes from pensions. The biggest chunk of that pension cash comes from DB plans. The rest is from RRSPs, CPP and other supports such as OAS. That cash keeps smaller communities afloat because the money DB pensioners spend is someone else's income. In Toronto, pensions contribute 11 cents of every dollar of income in the city. Thus, DB pension plans help with social cohesion and reduce pressure on government programs.

Here are some other findings:

- In 2012, Canadian DB plans paid out $72 billion to 3.5 million pensioners
- Most of this money is spent where the pensioners live
- Seven per cent ($27 billion) of all income in Ontario's towns and cities is derived from DB pensions, which annually generates $3 billion in federal and provincial income tax and $2 billion in sales taxes
- Seniors with DB plans are confident consumers because the predictable income stream allows them to better plan their affairs
- DB plans offer a broader social benefit because people who get them rely less on benefits like the GIS, to the tune of $2–$3 billion a year

Other economic impacts

The impact of public sector pension plan assets on the Canadian economy is immense. As reported by the Bank of Canada, the eight largest Canadian public pension funds—Canada Pension Plan Investment Board, Caisse de dépôt et placement du Québec, Ontario Teachers' Pension Plan, British Columbia Investment Management Corporation, Public Sector Pension Investment Board, Alberta Investment Management Corporation, OMERS and Healthcare

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24 *Assessing the Economic Impacts of Pension-Income Spending in British Columbia* (Prepared by Urban Futures, BC Pension Corporation, July 2, 2015).

25 "New Analysis confirms that defined benefit pensions provide significant benefits to Canadian economy," (Ontario Municipal Employees Retirement System, October 22, 2013).

of Ontario Pension Plan—are major investors globally as well as domestically, with net assets under management of more than $1 trillion.[26]

Because of their size, their longer-term investment horizons, the diversity of their investment strategies and the stability of member contributions, these funds may be better able than other financial market participants to invest counter-cyclically and act as a stabilizing force in the Canadian financial system.

Pension funds are important sources of retirement income for Canadians that put into action patient investment capital for the global economy. The pension fund sector holds about 15 per cent ($1.5 trillion) of the total assets of the Canadian financial system. About two-thirds of pension assets are managed by the eight largest public pension funds in Canada. With net investment assets ranging from $64 to $265 billion, the Big Eight are among the world's largest pension funds. All eight were included in a list of the 100 largest pension funds, with three of them ranked among the 20 largest.

Pension funds contribute to financial stability because of their size and behaviour. They have long investment horizons, invest real money as opposed to borrowing and have the luxury of patience to withstand short-term market volatility and liquidity stresses. Because contributions to pension funds are locked in, they are not at risk of mass withdrawals or runs during a financial crisis.

The funds are also strong contributors to improving corporate governance practices. They take an active role in the companies in which they invest. The funds also provide a stable source of employment in the financial sector, with approximately 10,000 professionals employed and a payroll of $1.5 billion plus $2 billion in fees paid to other supporting jobs.

Concerns about health and long-term care

Key findings from a HOOP paper show the potential impact of health care and long-term care costs on Canadian retirees. About 323,000 Canadians have inadequate retirement income once long-term-care costs are factored in. The percentage of 85-year-old women with inadequate retirement income rises from 25 to 44 per cent when long-term-care costs are considered.[27] ("Inadequate retirement income" is defined as having less than a 50 per cent net income replacement rate.) This number could grow to approximately 815,500 by 2038 because of population aging. As is well known, out-of-pocket health-care costs rise with age.

The impact on OAS/GIS

Data from a 2016 Canadian Public Pension Leadership Council survey shows the expectation of receiving GIS is highest among people of older ages (but below 65) and those at low incomes. Only 10 per cent of DB plan members expect to receive GIS. More than a quarter of

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26 Guillaume Bédard-Pagé, Annick Demers, Eric Tuer, and Miville Tremblay, "Large Canadian Public Pension Funds: A Financial System Perspective," (Financial system review, Bank of Canada, June 2016).

27 "Health and retirement security research: Summary of findings" (Healthcare of Ontario Pension Plan, October 2016).

all other survey recipients expect to collect GIS with DC members at 26 per cent, group RRSP members at 30 per cent and people without a workplace pension plan at 31 per cent.[28]

Among DB members, 74 per cent thought their plan would be their main source of income in retirement compared to 52 per cent of DC members and 24 per cent of group RRSP members.

OMERS reports an estimated 10 to 15 per cent of DB beneficiaries collect GIS compared to 45 to 50 per cent of other Canadian retirees.[29]

Dr. Richard Shillington analyzed Statistics Canada data regarding receipt of GIS and found the following:

Summary results for families and unattached individuals 65+
Assets are for 2016; income values are for 2015

	Averages		
	Employer pension		
	Without	With*	Combined
Population	1,911,000	2,297,000	4,208,000
Income sources—averages ($)			
Income (family and unattached individuals)	$56,000	$83,000	$71,000
Earnings	18,000	28,000	23,000
Pension income (RPP, RRIF, RRSP, annuity)	6,000	27,000	18,000
OAS	7,000	8,000	7,000
GIS	4,000	1,000	2,000
CPP/QPP	$7,000	$11,000	$9,000
Per cent of households (%)			
Receiving OAS	88	90	89
Receiving GIS	54	17	34
Per cent of households (%)			
With TFSA	36	54	46
With RRSP	42	72	58
Value of retirement assets—averages ($)			
RRSP	$84,000	$124,000	$106,000
TFSA	12,000	23,000	18,000
Private savings (RRSP, TFSA)	97,000	147,000	124,000
RPP	–	322,000	176,000
Retirement savings (RRSP, TFSA, RPP)	$97,000	$469,000	$300,000

* "With," means having a pension plan with at least $1,000 in pension assets
Source: "Special tabulations by Richard Shillington using the *Survey of Financial Security, 2016*"

28 Baldwin.
29 "New Analysis confirms" (OMERS, 2013).

Perhaps more revealing is the next table, which presents the above data as median values instead of averages:

Summary results for families and unattached individuals 65+
Assets are for 2016; income values are for 2015

	Medians		
		Employer pension	
	Without	With*	Combined
Population	1,911,000	2,297,000	4,208,000
Income sources—median values ($)			
Income (family and unattached individuals)	$33,000	$66,000	$52,000
Earnings	–	–	–
Pension income (RPP, RRIF, RRSP, annuity)	–	22,000	7,000
OAS	7,000	7,000	7,000
GIS	2,000	–	–
CPP/QPP	$7,000	$11,000	$9,000
Value of retirement assets—median values ($)			
RRSP	$–	$50,000	$16,000
TFSA	–	4,000	–
Private savings (RRSP, TFSA)	5,000	68,000	35,000
RPP	–	217,000	37,000
Retirement savings (RRSP, TFSA, RPP)	$5,000	$337,000	$143,000

* "With," means having a pension plan with at least $1,000 in pension assets
Source: "Special tabulations by Richard Shillington using the *Survey of Financial Security, 2016*"

These two tables present interesting information: Canadian families and unattached individuals aged 65 and up who have had a workplace pension at some time in their career have larger incomes. This is almost all attributable to their pension income. Those with a workplace pension depend far less on the GIS system for income assistance after age 65. While 54 per cent of workers who did not have a workplace pension receive GIS benefits, only 17 per cent of those who have had a workplace pension do so.[30]

Those with a workplace pension also save more in other vehicles; here, the median values are more revealing. A worker with a workplace pension has RRSPs with a median value of $50,000, while a worker without a workplace pension has RRSPs with a median value of zero dollars. Similarly, the worker with an RPP has TFSAs with a median value of $4,000, while the worker without an RPP has nothing.

We can conclude that the worker with a workplace pension will live at a higher standard of living in retirement, pay more taxes and make far less use of welfare systems such as the GIS.

30 "Special tabulations by Richard Shillington using the *Survey of Financial Security, 2016.*" (see table above)

Dr. Richard Morrison also conducted a micro-simulation analysis on 45 scenarios.

The 45 cells were defined by the following:

- Five earning levels—$40,000; 60,000; 80,000; 100,000; 120,000
- Three periods of retirement savings—20 years, 25 years, 30 years (all centered at age 45)
- Three retirement saving strategies—do nothing, participate in a DB plan, use RRSPs to save for retirement (i.e., the order of presentation in Tables 1, 2 and 3)

The worker with the DB plan received the same total compensation as the other workers in the defined earnings bracket; however, 10 per cent of that worker's pay was diverted into the DB pension (i.e., taxpayers' contribution). This is important when determining replacement ratios.

For the DB plan, we assume investment income at 6 per cent pa nominal and 3.9216 real (CPI = 2 per cent).

For the DC/RRSP, we assume investment income at 54 per cent of 6 per cent = 3.24 nominal and 1.2157 real.[31]

We further assumed continuous contributions and continuous interest; therefore, a worker earning $60,000 a year and participating in the DB plan for 30 years (centered at age 45) would have accumulated $410,417 by age 65.

The same worker in the DC/RRSP plan would have accumulated $230,465 by age 65.

Both workers "annuitize" at age 65, but the DB plan annuitizes for its worker internally with higher rates of return and the benefit of carrying the longevity risk. The annuity factor for this worker comes from the CAAT plan at age 65 (male) with a five-year guarantee and no indexing. The annuity factor is 12.4489 for an annual income of $32,968 paid monthly for life.

For the DC/RRSP, we got a corresponding annuity factor from CANNEX (a Canadian annuity exchange listing). That factor is 15.5351 (male) with a five-year guarantee and no indexing. This annuity is more costly, given commissions, the cost of anti-selection, lower investment returns and a profit margin; therefore, the DC/RRSP worker receives $14,835 per year paid monthly for life. Everything is in 2018 dollars.

It's apparent that being in a DB pension has a big advantage over saving for retirement with RRSPs. In this example, the worker in the DB plan ends up with a pension that is 2.2 times greater even though the "cost" (i.e., contributions) are identical.

What is the impact on each worker's ability to save for retirement?

Given the systems in Canada today, with no change (e.g., no second-tier CPP), what is the impact of having a good pension plan? How much does each worker get from their own resources, plus CPP, OAS, GIS? Also, what income tax does the worker pay?

The analysis shows that as the worker provides more, Canadian taxpayers provide less. Workers who save nothing have no sources of retirement income of their own and live on the lowest annual income equal to the total of their OAS, GIS (paid for by Canadian taxpayers) and CPP.

31 Fifty-four per cent assumption from report by Beth Almeida and William B. Fornia, "A Better Bang for the Buck; The Economic Efficiencies of Defined Benefit Pension Plans" (Washington: National Institute on Retirement Security, 2008).

The highest replacement ratios are achieved by those in the DB plan at any earnings level. The very highest income replacement ratio is 90 per cent for a worker earning $40,000 a year (but taking home $36,000) and participating in a DB pension for 30 years. (These replacement ratios decline as the earnings levels rise.) The lowest replacement ratio for the $40,000 earnings level is 50 per cent; it is realized by the worker who does not save for retirement. The RRSP saver lies in between these extremes. The non-saver has the lowest replacement ratios at all earnings levels and must rely on government assistance—a cost to taxpayers.

Clearly, workers with a DB plan retire with much higher incomes payable for life and much higher confidence. This allows them to spend more money in their communities, becoming an important economic engine.

They also pay more taxes. (See Table 2 in Appendix A.) As well, worker 44 in Table 2 has to repay some of their OAS benefits. The OAS clawback occurs when your net income exceeds $75,910; OAS is fully clawed back once your net income reaches $122,843. Workers with DB plans have total outflows (taxes and clawbacks) about 2.5 times workers with DC plans or RRSPs and infinitely larger than those of workers who save nothing. Obviously, this is a huge net gain for all other Canadian taxpayers.

Consistent with these findings, the office of the chief actuary in the 14th Actuarial Report of the Old Age Security Program (which includes GIS) commented on the impact the new mandatory second tier of the CPP/QPP would have on the GIS.

The report found the introduction of additional CPP will affect GIS and allowance recipient rates and the amount of expenditures. Part of the reduction in the projected overall GIS recipient rate can be attributed to the additional CPP benefits that will gradually become payable starting in 2019. The impact of additional CPP will be very gradual and, by 2060, together with other factors, lead to a projected overall GIS recipient rate of 25.3 per cent instead of 27.2 per cent in the absence of additional CPP benefits (a reduction of 6.8 per cent or 243,000 fewer beneficiaries). As well, in the presence of additional CPP benefits, GIS annual expenditures in 2060 are projected to be $46.0 billion instead of $49.0 billion (a reduction of 6.2 per cent or $3.0 billion).

The OAS recovery tax is also affected.

Over the short term, the effect of additional CPP benefits on the number of recipients affected by the OAS recovery tax is expected to be small given that additional CPP benefits will only start in 2019. However, it is expected that, as more individuals receive additional CPP benefits over time, the impact of additional CPP benefits will increase. It is estimated that additional CPP benefits will increase the number of recipients affected by the OAS recovery tax by 13,000 (from 710,000 to 723,000) or 1.8 per cent in 2040 and by 76,000 (from 1,069,000 to 1,145,000) or 7.1 per cent in 2060. In 2060, due to additional CPP benefits, the number of individuals subject to a full repayment of their OAS pensions is projected to increase by 18,000 (from 324,000 to 342,000) or 5.6 per cent, and the number of individuals subject to a partial repayment is projected to increase by 58,000 (from 745,000 to 803,000) or 7.8 per cent.

In 2040, additional CPP benefits are expected to increase the amount of OAS recovery tax by $60 million (from $4.40 billion to $4.46 billion), or 1.4 per cent. In 2060, additional CPP benefits are expected to increase the amount of OAS recovery tax by $740 million (from $9.53 billion to $10.27 billion) or 7.8 per cent. In 2060, due to additional CPP benefits, the amount of full repayments of the basic pension is projected to increase by $320 million (from $5.28 billion to $5.60 billion) or 6.1 per cent, and the amount of partial repayments is projected to increase by $420 million (from $4.25 billion to $4.67 billion) or 9.9 per cent.

The addition of a new mandatory DB pension (additional CPP) will have significant cost reduction implications for OAS and GIS. This cost-reduction impact occurs because of retirement income from any DB pension plan including those from the public sector DB pension plans now in existence, as we have seen.

Another point worth noting it that the workers in the DB plan will get this income for life and cannot manipulate their income cash flows within the system to take advantage of the formulas that decide how much OAS/GIS you get. Workers in the DC or RRSP systems can and do manage their income to maximize their benefits from OAS and GIS and other social benefits such as Ontario's Guaranteed Annual Income System (GAINS) and the non-payment of Medical Services Plan (MSP) premiums in British Columbia.

For example, a worker who earns $40,000 a year but puts $4,000 into a RRSP over 30 years will accumulate $153, 644. At age 65 they could defer their OAS benefits, drain the RRSP before turning 70 and increase the payment amount of the OAS by 36 per cent. They could also then be eligible for a full GIS, which could mean thousands of dollars of added costs to Canadian taxpayers. Someone with a DB pension plan cannot do that.

Similarly, a worker with a smaller RRSP nest egg could take all of their savings out between ages 65 and 68, pay some small extra marginal tax and not get as much out of OAS and GIS in that period but then be eligible for larger OAS and GIS payments from age 68 onward.

Note that a full OAS benefit in 2018 is $7,040 per year and a full GIS benefit is $10,694, paid entirely by taxpayers. Given today's life expectancies, this could amount to millions of dollars.

And, if workers save for retirement through TFSA's there is no negative impact on OAS/GIS.

A DB plan forces the slow, stable extraction of the pension asset so this manipulation is not possible as it is with RRSP assets.

The essential point is that the creative structuring of retirement income resources by non-DB plan participants, or simply the application of bona fide income thresholds, can ultimately take resources from government social support systems such as GIS, which is paid for entirely by taxpayers—resources that DB plan participants are not likely eligible for.

Conclusion

Yes, the public sector has good pension plans, for which taxpayers pay real money, with members typically paying 50 per cent of the cost. If they were eliminated, taxpayer "savings" would be much smaller than one would expect by looking at the contributions that fund public sector DB plans.

This paper has shown that workplace pension plans benefit society—specifically the guaranteed nature of DB plans and how that helps reduce stress, increases productivity, lowers health-care costs and better manages the Canadian workforce. The marginal cost of providing DB plans instead of DC plans are less than the net impact of increased severance and benefit costs, and recruiting and training costs, which are often higher in the public sector.

At the same time, benefits from these plans greatly reduce the dollars of benefits from other Canadian social welfare systems such as OAS/GIS and social benefits like GAINS in Ontario and the non-payment of MSP premiums in British Columbia. Finally, these retirement income benefits generate tax revenues, help grow the economy and provide stability to Canadian cities and towns.

Despite the introduction of DC plans, RRSPs, TFSAs and a variety of financial products, DB plans remain the best way to save for retirement. Canadians want the features offered by DB plans, and they are willing to pay to get them. We know people who save more for retirement when they contribute to DB plans. We also know that expense ratios are lower, longevity risks are managed and pooled investments provide consistent investment returns.

The question is not whether public sector workers should continue to have DB plans; the question is why don't all Canadians have them?

The question is not whether public sector workers should continue to have DB plans; the question is why don't all Canadians have them?

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APPENDIX A: The full 45-scenario analysis

The 45 cells were defined by the following

- Five earning levels—$40,000; $60,000; $80,000; $100,000; $120,000
- Three levels of retirement savings attachment—20 years, 25 years, 30 years
- Three retirement savings strategies: do nothing, participate in a DB plan, use RRSPs to save for retirement

Table 1

Additional Table 1: Age 65—income sources

Income	DB pension income	RRSP withdrawals	CPP benefits	OAS benefits	GIS benefits	Total inflows
Subject identifier						
1	0.00	0.00	7,294.75	7,092.77	5,645.98	20,033.50
2	14,214.56	0.00	6,565.27	7,092.77	0.00	27,872.60
3	0.00	6,573.40	7,294.75	7,092.77	2,041.63	23,002.55
4	0.00	0.00	7,294.75	7,092.77	5,645.98	20,033.50
5	18,103.30	0.00	6,565.27	7,092.77	0.00	31,761.34
6	0.00	8,227.99	7,294.75	7,092.77	1,214.33	23,829.84
7	0.00	0.00	7,294.75	7,092.77	5,645.98	20,033.50
8	21,978.75	0.00	6,565.27	7,092.77	0.00	35,636.79
9	0.00	9,890.09	7,294.75	7,092.77	383.28	24,660.89
10	0.00	0.00	10,874.04	7,092.77	3,538.68	21,505.49
11	21,321.84	0.00	10,504.44	7,092.77	0.00	38,919.05
12	0.00	9,860.10	10,874.04	7,092.77	0.00	27,826.91
13	0.00	0.00	10,874.04	7,092.77	3,538.68	21,505.49
14	27,019.95	0.00	10,504.44	7,092.77	0.00	44,617.16
15	0.00	12,341.99	10,874.04	7,092.77	0.00	30,308.80
16	0.00	0.00	10,874.04	7,092.77	3,538.68	21,505.49
17	32,968.13	0.00	10,504.44	7,092.77	0.00	50,565.34
18	0.00	14,835.14	10,874.04	7,092.77	0.00	32,801.95
19	0.00	0.00	11,553.67	7,092.77	3,198.87	21,845.31
20	28,429.12	0.00	11,553.67	7,092.77	0.00	47,075.56
21	0.00	13,146.80	11,553.67	7,092.77	0.00	31,793.24
22	0.00	0.00	11,553.67	7,092.77	3,198.87	21,845.31
23	36,026.60	0.00	11,553.67	7,092.77	0.00	54,673.04
24	0.00	16,455.98	11,553.67	7,092.77	0.00	35,102.42
25	0.00	0.00	11,553.67	7,092.77	3,198.87	21,845.31
26	43,957.50	0.00	11,553.67	7,092.77	0.00	62,603.94
27	0.00	19,780.18	11,553.67	7,092.77	0.00	38,426.62

Income	DB pension income	RRSP withdrawals	CPP benefits	OAS benefits	GIS benefits	Total inflows
Subject identifier continued						
28	0.00	0.00	12,233.30	7,092.77	2,859.06	22,185.12
29	35,536.40	0.00	12,233.30	7,092.77	0.00	54,862.47
30	0.00	16,433.50	12,233.30	7,092.77	0.00	35,759.57
31	0.00	0.00	12,233.30	7,092.77	2,859.06	22,185.12
32	45,033.25	0.00	12,233.30	7,092.77	0.00	64,359.32
33	0.00	20,569.98	12,233.30	7,092.77	0.00	39,896.05
34	0.00	0.00	12,233.30	7,092.77	2,859.06	22,185.12
35	54,946.88	0.00	12,233.30	7,092.77	0.00	74,272.95
36	0.00	24,725.23	12,233.30	7,092.77	0.00	44,051.30
37	0.00	0.00	12,912.92	7,092.77	2,519.24	22,524.93
38	42,643.68	0.00	12,912.92	7,092.77	0.00	62,649.37
39	0.00	19,720.02	12,912.92	7,092.77	0.00	39,725.71
40	0.00	0.00	12,912.92	7,092.77	2,519.24	22,524.93
41	54,039.90	0.00	12,912.92	7,092.77	0.00	74,045.59
42	0.00	24,683.97	12,912.92	7,092.77	0.00	44,689.66
43	0.00	0.00	12,912.92	7,092.77	2,519.24	22,524.93
44	65,936.25	0.00	12,912.92	7,092.77	0.00	85,941.94
45	0.00	29,670.27	12,912.92	7,092.77	0.00	49,675.96

Table 2

Transposed version of additional Table 2 (from the results sheet)
Additional Table 2: Age 65—repayments and taxes
Note regarding double counting: social benefit repayments are included in (i.e., part of) the calculated income taxes

Outflows -------->	OAS repaid	GIS repaid	Federal income tax provincial income tax	Provincial income tax	Total outflows
Subject identifier					
1	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	1,009.59	504.80	1,514.39
3	0.00	0.00	272.84	136.42	409.26
4	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	1,592.90	796.45	2,389.35
6	0.00	0.00	521.03	260.51	781.54
7	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	2,174.22	1,087.11	3,261.33
9	0.00	0.00	770.34	385.17	1,155.51
10	0.00	0.00	0.00	0.00	0.00

Outflows -------->	OAS repaid	GIS repaid	Federal income tax provincial income tax	Provincial income tax	Total outflows
Subject identifier continued					
11	0.00	0.00	2,710.28	1,355.14	4,065.41
12	0.00	0.00	1,302.74	651.37	1,954.10
13	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	3,693.20	1,846.60	5,539.80
15	0.00	0.00	1,675.02	837.51	2,512.53
16	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	4,937.08	2,468.54	7,405.62
18	0.00	0.00	2,048.99	1,024.50	3,073.49
19	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	4,143.15	2,071.58	6,214.73
21	0.00	0.00	1,897.69	948.84	2,846.53
22	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	5,871.58	2,935.79	8,807.37
24	0.00	0.00	2,394.06	1,197.03	3,591.09
25	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	7,675.86	3,837.93	11,513.79
27	0.00	0.00	2,925.33	1,462.67	4,388.00
28	0.00	0.00	27.61	13.80	41.41
29	0.00	0.00	5,914.68	2,957.34	8,872.01
30	0.00	0.00	2,492.63	1,246.32	3,738.95
31	0.00	0.00	107.00	107.00	41.41
32	0.00	0.00	8,075.21	4,037.60	12,112.81
33	0.00	0.00	3,178.81	1,589.40	4,768.21
34	0.00	0.00	27.61	13.80	41.41
35	0.00	0.00	10,330.56	5,165.28	15,495.84
36	0.00	0.00	3,895.59	1,947.79	5,843.38
37	0.00	0.00	129.55	64.78	194.33
38	0.00	0.00	7,686.20	3,843.10	11,529.30
39	0.00	0.00	3,149.43	1,574.71	4,724.14
40	0.00	0.00	129.55	64.78	194.33
41	0.00	0.00	10,278.84	5,139.42	15,418.26
42	0.00	0.00	4,005.71	2,002.85	6,008.56
43	0.00	0.00	129.55	64.78	194.33
44	1,504.79	0.00	12,642.92	6,321.46	18,964.38
45	0.00	0.00	5,034.75	2,517.37	7,552.12

Table 3

Additional Table 3: Age 65—net inflows and outflows, and the resulting after-tax (spendable) income

Flows --->	Total inflows	Total outflows	Net after-tax income
Subject identifier			
1	20,033.50	0.00	20,033.50
2	27,872.60	1,514.39	26,358.22
3	23,002.55	409.26	22,593.29
4	20,033.50	0.00	20,033.50
5	31,761.34	2,389.35	29,371.99
6	23,829.84	781.54	23,048.30
7	20,033.50	0.00	20,033.50
8	35,636.79	3,261.33	32,375.47
9	24,660.89	1,155.51	23,505.38
10	21,505.49	0.00	21,505.49
11	38,919.05	4,065.41	34,853.64
12	27,826.91	1,954.10	25,872.81
13	21,505.49	0.00	21,505.49
14	44,617.16	5,539.80	39,077.36
15	30,308.80	2,512.53	27,796.27
16	21,505.49	0.00	21,505.49
17	50,565.34	7,405.62	43,159.72
18	32,801.95	3,073.49	29,728.46
19	21,845.31	0.00	21,845.31
20	47,075.56	6,214.73	40,860.83
21	31,793.24	2,846.53	28,946.71
22	21,845.31	0.00	21,845.31
23	54,673.04	8,807.37	45,865.67
24	35,102.42	3,591.09	31,511.32
25	21,845.31	0.00	21,845.31
26	62,603.94	11,513.79	51,090.15
27	38,426.62	4,388.00	34,038.62
28	22,185.12	41.41	22,143.71
29	54,862.47	8,872.01	45,990.45
30	35,759.57	3,738.95	32,020.61
31	22,185.12	41.41	22,143.71
32	64,359.32	12,112.81	52,246.50
33	39,896.05	4,768.21	35,127.83

Flows --->	Total inflows	Total outflows	Net after-tax income
Subject identifier continued			
34	22,185.12	41.41	22,143.71
35	74,272.95	15,495.84	58,777.11
36	44,051.30	5,843.38	38,207.91
37	22,524.93	194.33	22,330.60
38	62,649.37	11,529.30	51,120.08
39	39,725.71	4,724.14	35,001.57
40	22,524.93	194.33	22,330.60
41	74,045.59	15,418.26	58,627.34
42	44,689.66	6,008.56	38,681.10
43	22,524.93	194.33	22,330.60
44	85,941.94	18,964.38	66,977.57
45	49,675.96	7,552.12	42,123.84

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