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The Retirement Income System and the Risks Faced by Canadian Seniors

Kevin Milligan
University of British Columbia

Tammy Schirle
Wilfrid Laurier University

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Kevin Milligan, University of British Columbia

kevin.milligan@ubc.ca

Tammy Schirle, Wilfrid Laurier University

tschirle@wlu.ca

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Abstract

In this paper, we use a risk framework to analyze the risks seniors face and discuss the success of Canada's retirement income system in insuring against these risks. We focus on four types of risk: (i) the risk of low income at the onset of retirement, (ii) longevity risk, (iii) business cycle risk, and (iv) decision-making risk. The research conducted by CLSRN researchers and others leads us to conclude that, overall, Canada's retirement income system successfully mitigates against most risks facing Canadian seniors. Important gaps remain, however. Some demographic groups remain at higher risk of poverty at the onset of retirement. Risks of longevity and widowhood are not fully insured. Private savings are subject to financial return risk. The complexity of some retirement income programs makes it difficult for seniors to plan their retirement income optimally.

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Executive Summary

A team of CLSRN researchers were tasked with investigating the challenges to Canada's Retirement Income System (RIS). Researchers examined various aspects of the composition and adequacy of seniors' income in retirement, the importance of demographic factors for retirement income, the impact of business cycle fluctuations on retirement income, the importance of policy complexity for retirement planning, and expectations for future retirement incomes. The research conducted has helped us clarify those areas in which Canada's RIS has been quite successful and also those areas where challenges remain.

The results of the CLSRN research program form the foundation of this paper. In this paper we use a risk framework to analyze the risks seniors face and discuss the success of Canada's retirement income system in insuring against these risks. We focus on four types of risk:

- (i) the risk of low income at the onset of retirement – if retirees find themselves with low income at the onset of retirement, they are likely to remain in that state for the rest of their lives,
- (ii) the risk of longevity and loss of a spouse – if one lives longer than they planned for or if the loss of a spouse leads to lower than expected living standards,

- (iii) the risk of recessions – which includes the financial return risk that can negatively affect the value of retirement assets and the risk of unemployment, and
- (iv) the risks in decision making – whereby the average Canadian might not be well-equipped to fully understand the implications of portfolio choices.

We find that Canada's RIS is succeeding in mitigating the worst outcomes for those with low incomes entering retirement and those who have unexpected longevity, and this success largely depends on Guaranteed Income Supplement provisions. On the other hand, the current system is doing less well in helping families deal with the complexity of system. Furthermore, the current system is doing less well in helping families face the risks of recessions – especially with respect to uncertain returns on financial assets.

Several policy implications follow from the research program:

- As permanent income is significant for predicting the risk of low income at the onset of retirement, investments made over the entire life-course – particularly investments in education – are important in reducing this risk.
- Opportunities for less risky pension incomes are important for mitigating the risk of long recessions. The introduction of PRPPs is not expected to reduce risk.
- Governments need to ensure those nearing retirement have the information necessary to make good decisions. In particular, efforts are needed to ensure

that GIS recipients do not face large effective marginal tax rates against their investment income.

- While GIS prevents the most severe hardship associated with longevity risk, it is not designed to maintain many seniors' standards of living. Policy levers that improve the availability of annuities and other decumulation products are needed.

1. Introduction

According to the World Bank (1994), a country's retirement income system (RIS) should be designed to meet three objectives – savings, redistribution, and insurance. First, the RIS should facilitate savings that result in adequate income replacement in retirement. People desire smoothness in their consumption patterns between their working and retired life and a well-designed RIS should help this aim be achieved. Second, the RIS redistribution policies should work to alleviate poverty among those unable to save for their own retirement.¹ Many with low lifetime earnings would suffer if forced to save more when young, so redistribution in their favour when older relieves them of the savings burden when younger. Third, the RIS should provide insurance that protects the elderly against the various income risks they may face in retirement. Even people who have planned well and had adequate lifetime earnings can be hit with unexpected events before or during retirement that can have a large impact on their retirement incomes. According to the World Bank's view, a well-designed RIS should achieve all three of these objectives.

These three objectives, however, do not operate in parallel. Instead, we view the insurance objective for the RIS as one that supports the other two objectives of income replacement and redistribution. That is, the cost of inadequate insurance in the RIS manifests through a failure to achieve either the income replacement or

¹ In this paper, the authors refer to poverty as a state in which individuals lack the resources necessary to achieve a standard of living considered normal and sufficient. The authors would like to emphasize that the term poverty does not necessarily represent the views of HRSDC and use of the term only represents the views of the authors.

redistribution objectives—we do not view a failure of insurance to be in itself a detriment to the wellbeing of seniors. Because of this supportive role for insurance, in the presence of risk, insurance becomes instrumental to the achievement of the other two goals.

In this paper, we synthesize and discuss the Canadian Labour Market and Skills Researcher Network (CLSRN) research program on “Challenges to Canada’s retirement income system.” We frame our analysis on the risks seniors face and the success of the RIS in insuring against these risks. While many of our results are informative on the earnings replacement and redistribution objectives for the RIS, we make our contribution in this synthesis paper by interpreting the research results through looking at earnings replacement and redistribution within our risk framework.

The uncertainty surrounding the risks faced by seniors results in many questions. Will they have enough income to maintain an adequate standard of living? Will they have difficulty finding employment that supplements their retirement income? Will they outlive their savings? What if they lose a spouse? What if the stock market crashes? What if they don’t fully understand the complex rules and options set out before them? Each of these questions relates to underlying risks that seniors may confront, and that the RIS may help insure against.

We arrange our analysis of the insurance aspect of the RIS by considering several types of risks that might arise.² We focus on four in particular. First, there is the risk of low income at the onset of retirement. Second, longevity risk arises if individuals might live longer than their financial plans had assumed. Third, recessions and business cycles can change the patterns and outcomes of savings decisions made in the past. Finally, individual decision making becomes riskier when rules are complex and hard to understand. While there may be other risks faced by seniors, these four risks are the ones on which our project provides the most informative evidence.

Our evidence in this project builds on a large volume of research on retirement and retirement incomes in Canada. We cannot in this synthesis paper provide a comprehensive review of this literature. However, some reference to this literature does help to place our work in context. The recent review of retirement income in Canada by Mintz (2009) views the Canadian RIS as largely successful in light of the World Bank (1994) objectives. The average Canadian achieves an income replacement rate that appears adequate. Elderly poverty rates in Canada are remarkably low and most individuals that were low-income while working are as well off, or even better off, in retirement. Mintz (2009) also points to evidence, however, that some middle and higher income Canadians are not saving enough for retirement.³

² Barr and Diamond (2008) provide a framework for understanding the various risks that pension plans face. Their framework was useful in structuring how we think about the risks facing individuals.

³ In particular, Ostrovksy and Schellenberg (2010) and LaRochelle-Côté, Picot, and Myles (2010) both study the distribution of replacement rates among Canadian retirees. LaRochelle-Côté, Picot, and Myles (2010) find evidence of inadequate replacement rates concentrated among those in higher income quintiles. Ostrovksy

Furthermore, he points to the complexity of investment decisions, which reduces the ability of seniors to save for retirement as professional (costly) management of their wealth does not appear effective. He also points to the risk facing those who rely on employer-provided pension plans during recessions.

The work of the CLSRN research team extends and builds on the findings of Mintz (2009), as well as filling in some of the gaps that remained. The CLRSN researchers have shown that the expansion of governments' role in the RIS over the second half of the 20th century substantially raised the well-being of Canada's seniors. For example, we've seen significant reductions in elderly poverty that can be linked to the expansion of income maintenance programs for seniors. The earnings-related components of the system have aided in buttressing the income-replacement rates of middle income earners. Other components help mitigate the consequences of unexpected longevity or widowhood, and (public and employer-sponsored) defined benefit pensions have offered some protection from stock market volatility.

The research in our project has also shown, however, that important gaps remain in Canada's RIS. Some demographic groups remain at higher risk of poverty at the onset of retirement and the risks of longevity or widowhood are not fully insured. Private savings are subject to financial return risk, and not all workers have access to savings

and Schellenberg (2010) cut the data by those with and without employer pension plans, and are thus able to locate the concentration of inadequate replacement rates among those in middle and upper earnings quintiles without an employer pension.

vehicles that would mitigate these risks. The complexity of some retirement income programs makes it difficult for seniors to plan their retirement income optimally.

This synthesis paper is organized in the following manner. In section 2 we document the experience of seniors, including trends in senior poverty, income, income sources, and demographics. We also consider how these trends may change in the near future. In section 3 we evaluate the way that Canada's RIS influences the extent to which seniors are exposed to the four risks outlined above. In section 4 we emphasize several points where important gender differences exist and warrant consideration. In section 5 we summarize the various lessons for policy that can be derived from this body of research. Finally, we offer some concluding remarks in section 6. A full description of Canada's RIS and summaries of the CLSRN research papers have been provided in an Appendix for reference.

2. Retirement and Retirement Income

To set the context for our discussion of how Canada's RIS helps seniors insure against the risks they face, we first must document the relevant trends in seniors' incomes, and our expectations for their future income patterns. Several of our papers document and provide evidence on these trends and we discuss them in this section.

The first challenge in discussing any aspect of retirement is to define what we mean by retirement. Denton and Spencer (2009) review the literature and show that non-participation in the labour force, a reduction in hours worked (and/or earnings) and self-assessment have been commonly used as measures of retirement. In practice, the measure of retirement used often reflects the information available to the researcher and the goals of their study.

Finnie and Spencer (2012) have used the Longitudinal Administrative Database (LAD) to identify retirees as those who experience “a major and sustained reduction in employment income.” More specifically, a person is retired when his or her employment income falls below 10 percent of what it was at ages 50-52 for three successive years. Using the Survey of Labour and Income Dynamics (SLID, in which the income histories are much shorter – only 6 years), Milligan (2012) identifies early retirees with various definitions - as those who do not report earnings as their major source of income, those who self-report as retired, or those who have zero earnings. Overall, age patterns of retirement (Figure 1 A-D) are fairly similar across the various definitions used – the likelihood of entering retirement gradually increases over age 50-59, jumps at age 60/61 and jumps again at age 65/66. Results from Finnie and Spencer (2012) suggest that more than 70 percent of men and women have entered retirement by age 66.

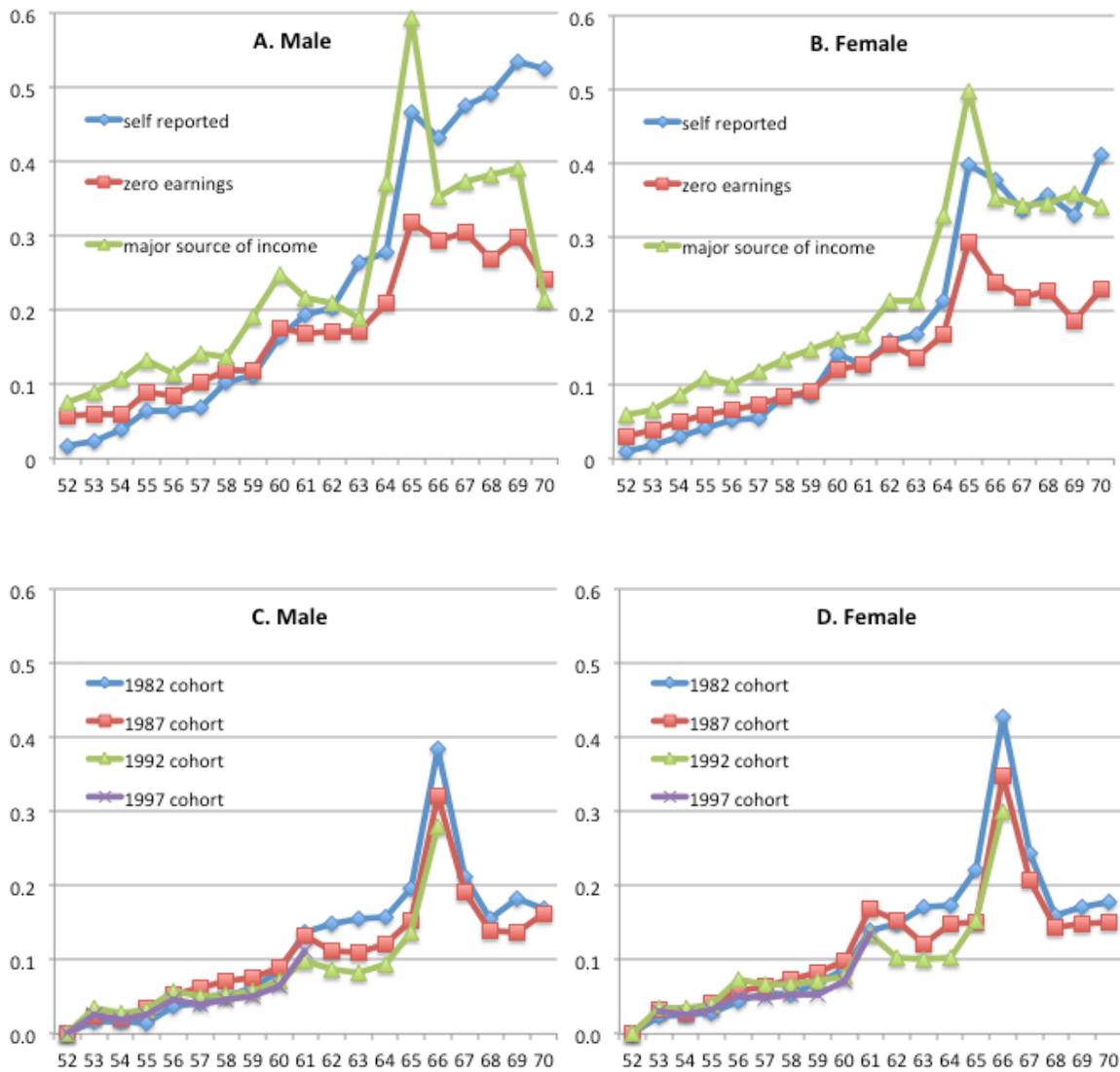


Figure 1 Age of retirement by definition and gender

Source: Figures 1A and 1B are reproductions of results in Milligan (2012) based on SLID and represent year-to-year transitions into retirement. Figures 1C and 1D are reproductions of results in Finnie and Spencer (2012) based on LAD and represent the age at which employment income remains below 10% of the individual's employment income at age 50-52.

Early retirees (before age 65) are typically approached differently than retirees age 65 and over, and the definition of retirement may be more difficult to handle. Retirement patterns based on short income histories (presented by Milligan 2012) reflect the notion that non-work among those under 65 may represent spells of unemployment or non-employment between jobs rather than a permanent state of retirement. For example, Milligan's estimates indicate that those exiting the labour force before age 65 are less likely to be leaving full time jobs with a workplace pension. However, using Finnie and Spencer's (2012) definitions (reflecting a more permanent state of retirement), there is evidence that the average income replacement rates for men are slightly higher for those who retired in their 50s than in their 60s – suggesting that on average those who take early retirement are well positioned to do so. An important point to emphasize here is that while Milligan's (2012) estimates emphasize the situation of those marginally attached to the labour force, Finnie and Spencer's (2012) estimates will only capture those marginally attached if they leave the labour force entirely.

Overall, the average retiree appears to fare well in terms of their income replacement. According to Finnie and Spencer (2012) the average (individual income) replacement rates for men are about 60%.⁴ Women's replacement rates are typically higher and

⁴ We note that Finnie and Spencer's (2012) estimates are slightly lower than those presented by Mintz (2009) as prepared by Ostrovsky and Schellenberg (2010). The differences can be explained by the slightly older reference income in Ostrovsky and Schellenberg (2010) (based on ages 53-57) that will include more early retirements and the lack of a retirement definition in Ostrovsky and Schellenberg (2010) so that

increase with age. As older women's higher replacement rates correspond to increases in C/QPP and employer-provided pension income, it also appears survivor benefits available to widows are an important source of income for older women. These findings address the role of the RIS in assisting Canadians with building streams of retirement income that adequately replace working-age earnings.

Finnie and Spencer (2012) make many contributions relative to existing work on replacement rates in Ostrovsky and Schellenberg (2010) and LaRochelle-Côté, Picot, and Myles (2010). The existing work has documented very well the extent of low replacement rates among middle and high earners that attracted the concern of Mintz (2009) and is a continued focus of policy proposals about retirement income. The work of Finnie and Spencer (2012) does not push further on the distribution of replacement rates, but instead provides other important insights. Foremost is the much expanded scope of their analysis to many cohorts and also to following the path of incomes and replacement rates in each year before and after retirement. They also provide a meticulous examination of the sensitivity of the results to the replacement rate measures used. Finally, by breaking down total income into its components they are able to offer precision in exactly which components of the RIS are leading to successful income replacement in retirement.

many individuals with significant employment income are included as retirees in their sample. It is also worth noting that Finnie and Spencer (2012) use a before-tax replacement rate, which will tend to show lower replacement rates than after-tax measures.

Recent retirees over age 65 also appear to fare reasonably well in terms of their likelihood of having low income. While estimates of the incidence of low income will depend on the measures chosen, it is well documented that rates of low income among seniors fell substantially during the 1970s and 1980s. Purely relative measures of low income (including the elderly relative poverty measure, ERPM) have increased since the mid-1990s (see estimates in Schirle 2012), while more absolute measures such as LICO have not.⁵ Schirle's (2012) estimates indicate Low Income Cut-Off (LICO) rates among those age 65 and over were less than 6% in 2008 (based on after-tax economic family income). The 2008 rates were much higher among individuals under 65 – at 13% for 60-64 year olds, 10% for 55-59 year olds, and 8.1% for 25-54 year olds.

An important factor that stands out from the RIS research is that at age 65 a person becomes eligible for the GIS. Finnie, Gray and Zhang (2012) estimate that 31% of Canadians age 65 and over received GIS in the period 1986-2008. The likelihood of receiving GIS varies by many factors including age, marital status and region.

Incidence rates have not, however, changed much since the mid 1980s – while rising education levels, employment rates, and pension coverage among seniors have led to higher senior income (see Schirle 2012), the increases have not yet been large enough to push seniors' income beyond GIS eligibility thresholds. Expecting higher education levels in the future, resulting in higher earnings-related retirement income, Clavet et

⁵ The ERPM was introduced by Milligan (2008). The ERPM threshold is defined as one half the median income of the working age population.

al. (2012) project lower GIS incidence (in Quebec) by 2030 – with 39.8% of seniors eligible in 2010 and only 24.4% eligible in 2030.

The extent to which seniors rely on income sources other than OAS and GIS has changed substantially over time. More recent cohorts of retirees are more likely to report employment income – according to Finnie and Spencer (2012), 15 percent of retired males in their 1982 cohort (age 50 in 1982) reported employment income when age 55-60 and the 1992 cohort reported employment income at about twice that rate. While the more recent cohorts studied by Finnie and Spencer (2012) are just as likely as earlier cohorts to report RRSP income, the more recent cohorts are saving more in RRSPs. Employer-sponsored pension coverage has changed most dramatically. Schirle's (2012) estimates indicate that only 33% of men and 17% of women age 65 and over received employer pension income in 1977-1979. By 2006-2008 this increased to 71% of men and 61% of women. Estimates from Clavet et al. (2012) suggest this trend will continue, as future cohorts of retirees are expected to have larger pension incomes at each age.

To sum up this preliminary view on Canada's retirees and their incomes, on average Canadians are doing well. They enjoy decent replacement rates on average and low-income indicators for seniors showing much improvement from the levels seen in the 1970s. However, even if average outcomes look reasonable, the riskiness of the outcomes must be addressed. We turn next to the characterization of risks facing Canadian seniors and how the RIS helps them counter the risks they face.

3. Canada's RIS and the risks confronting seniors

In this section, we consider various forms of risk facing seniors in Canada, and discuss research results that demonstrate how Canada's RIS influences individuals' exposure to each form of risk. Specifically, we have organized our discussion into four categories of risk: (i) the risk of low income at the onset of retirement, (ii) the risk of longevity or the loss of a spouse, (iii) the risk of recessions, and (iv) the decision making risk that derives from the complexity of Canada's RIS. Some of these risks have a bigger impact on the earnings replacement goal, while others have a larger impact on the avoidance of low income.

A. The risk of low income at the onset of retirement

If retirees find themselves with low income at the onset of retirement, they are likely to remain in that state for the rest of their lives. As such we are interested in understanding those factors that place retirees at risk of inadequate earnings replacement. To some extent, the risk facing early retirees is viewed differently than the risk facing retirees over age 65, as early retirements are often voluntary. As the following discussion points out, however, there are many factors that both early and late retirees may not be able to manage or alter at the time of retirement.

Among those age 65 and over, the risk of low income at the onset of retirement is fairly low. Only 6% of individuals over age 65 had family after-tax income below the Low Income Cut-Off in 2008 (Schirle 2012). The analysis demonstrates the importance of public pension programs for reducing the risk of low income – particularly the GIS which raises the income of many seniors above low income thresholds. According to Finnie, Gray and Zhang (2012), more than 30% of taxfilers age 65 receive at least some GIS benefit. The concern here is that GIS receipt and low income is not a temporary state for seniors, so that many seniors receiving GIS at the onset of retirement will remain reliant on this program for the rest of their lives.

So, what places individuals at risk at the onset of retirement? One of the most prominent results in the research program is that an individual's lifetime earnings and labour market experiences are the most important factor describing the risk of low income in retirement. Finnie and Spencer (2012) show that individuals with lower employment income at age 50-52 on average have lower pensions, RRSP, and investment income in retirement. Finnie, Gray and Zhang (2012) measures permanent income as the average income at ages 50-52 in their analysis of GIS receipt. Not only is permanent income a significant predictor of GIS receipt, the results also show that many demographic characteristics we often associate with low income in retirement actually reflect the likelihood that a person's permanent income is low.

Education levels can proxy for the concept of permanent income in the analysis of retirement. Davies and Yu (2012) show that the likelihood of holding assets such as

RRSPs or RPPs is much higher (and on average the levels are higher among those who do hold) among those more highly educated. Schirle's (2012) estimates also demonstrate the importance of education as a predictor for the likelihood of low income among seniors. In particular, increases in the education of men have significantly contributed to past reductions in elderly poverty rates. Similarly, Milligan finds that having a university degree lower the rate of low income among early retirees by 25 percentage points.

Strongly correlated with permanent income, the research suggests a key factor predicting risk of low income is receipt of an employer-sponsored pension. Milligan's (2012) analysis of early retirees indicates that non-earners without an employer-sponsored pension experienced twice the rate of low income as non-earners with a pension. Without an employer-sponsored pension, individuals are heavily reliant on government transfers. Davies and Yu (2012) indicate that the majority of the income among those without an employer-sponsored pension is derived from CPP/QPP and OAS. Furthermore, the average CPP/QPP for those without an employer-sponsored pension tends to be lower than the average amount received by those who have an employer-sponsored pension.

Estimates by McDonald and Worswick (2012) indicate that older immigrants arriving in Canada later in life (after age 50) have a relatively high risk of low income in retirement. This risk is even higher for more recent cohorts of immigrants,

particularly those arriving from ‘non-traditional’ countries.⁶ These immigrants have significantly lower levels of both private and public pension income and many tend to work more at older ages. Consistent with GIS estimates by Finnie, Gray and Zhang (2012), lower income among immigrants will often reflect lower permanent income during their working lives. As McDonald and Worswick (2012) also point out, an examination of individual income among immigrants may misrepresent their standard of living. Many recent older immigrants, particularly those from non-traditional countries, tend to live with large extended families and rely on them for financial support.

One of the factors to differentiate from permanent income factors is health. Milligan’s (2012) estimates indicate that among 60-64 year old men, poor health significantly increases the likelihood of hardship – particularly among non-earners in this age group. This suggests that non-work in this age range may be unplanned and more difficult for individuals to manage.

Overall, we might expect the risk of low income at the onset of retirement – as it appears to largely depend on permanent income – to decline even further over time as education levels are expected to continue increasing over time and, as Clavet et al. (2012) illustrate, this should result in a lower incidence of low income over time.

⁶ Non-traditional broadly refers to countries other than the U.S. and Western European Countries.

B. The risk of longevity and loss of a spouse

Certain events in life are unavoidable – death is one of those. Longevity risk, however, is the risk that one lives longer than they planned for. As life expectancy continues to increase, one’s longevity may become more difficult to predict. Life expectancy has been generally increasing over time (see Figure 2) and is expected to continue.

Estimates in Clavet et al. (2012) project men’s life expectancy at age 65 to increase by 2.5 years between 2010 and 2030 and women’s life expectancy at age 65 to increase by 2 years between 2010 and 2030.

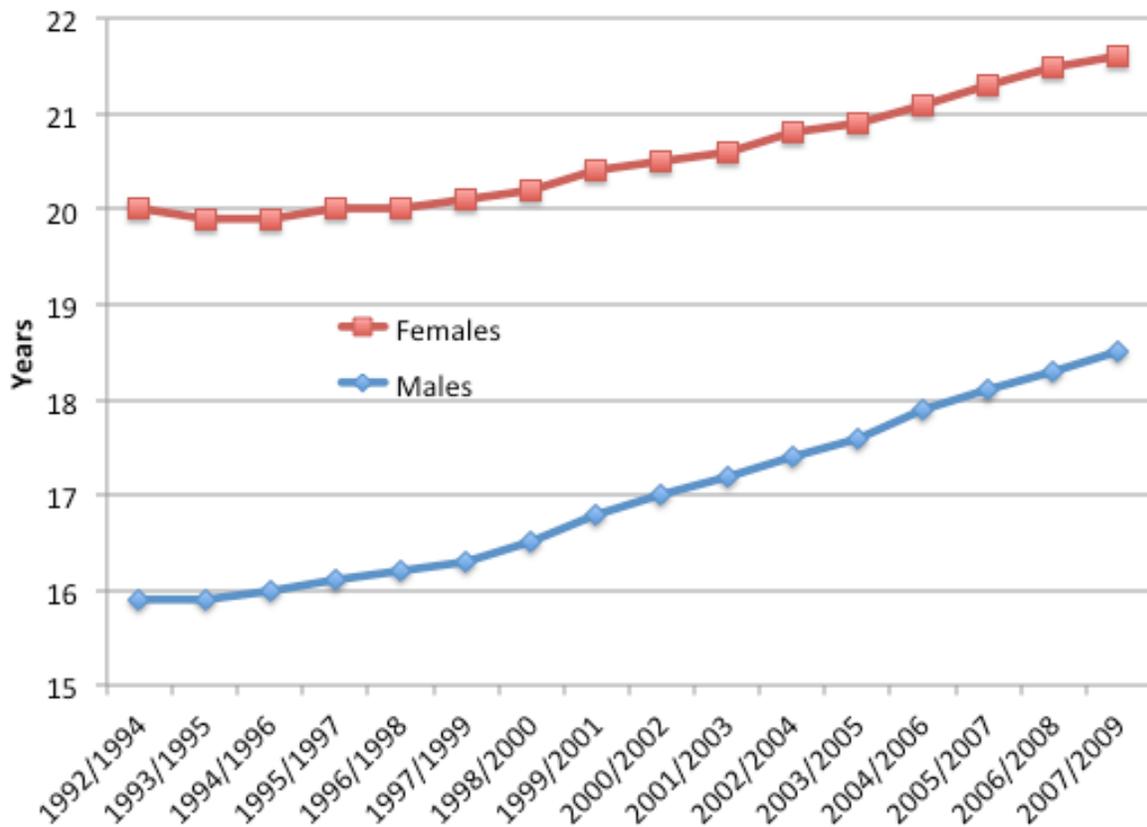


Figure 2 Life expectancy at age 65, by sex

Source: Cansim Table 102-0512.

The main concern here is that individuals will not have saved enough for this longer lifespan such that they face unanticipated financial hardship at older ages. The evidence in Finnie, Gray, and Zhang (2012) suggests that this is already the case for older Canadians. In their analysis of GIS receipt, the likelihood of receiving GIS gradually increases at older ages. Their estimates suggest the likelihood of becoming a GIS recipient increases after age 78 – so that by age 85, individuals are 1.8 percentage points more likely than 67 year olds to initiate GIS benefits. Men seem to avoid GIS longer, with their likelihood of becoming a GIS recipient increasing after age 83. Notably, this relationship holds after controlling for characteristics that would reflect a changing composition of the population with age (ie. who survives to older ages).

GIS receipt appears to successfully protect older seniors from severe hardship. Schirle's (2012) estimates show that seniors in the late 1970s had been more likely to experience relative poverty as they age. Following increased generosity of the GIS, Schirle's (2012) estimates from the mid-1990s suggest this relationship between poverty and age disappeared.

Several studies (including Milligan 2012, Schirle 2012, and Finnie, Gray and Zhang 2012) indicate that marital status is an important determinant of hardship at older ages. In theory, complete insurance against the loss of the spouse would mean that living standards should be unchanged when a spouse dies. To maintain living

standards with the loss of a spouse, it is not necessary for income to remain unchanged, as the expenditures necessary to maintain living standards are lower for one person than for two. However, income must not drop by so much that the surviving spouse's living standards cannot be maintained. As the actual expenditure patterns and needs of senior households undergoing loss are difficult to observe, it is a difficult task to assess whether the insurance against spousal loss is complete or partial. However, comparing income to the low-income benchmarks (which adjust for differing adequacy across family sizes) does provide some indication of the degree to which those suffering losses are insured against those losses.

For early retirees, Milligan (2012) indicates that being married significantly reduces the likelihood of low income. For example, conditional on a standard set of individual characteristics, married women (age 55-59 in 1993-2008) with zero earnings were 31 percentage points less likely to experience (LICO) low income relative to unmarried women. The effect was even larger for men. Within the group of early retirees, however, status as an unmarried person was more likely to reflect the event of divorce or separation rather than widowhood. Divorce was relatively rare among those age 65 years and over, so that the likelihood of outliving your spouse is the greater concern.⁷ Representing individuals age 65 and over, Schirle's (2012)

⁷ According to Statistics Canada CANSIM Table 101-6504, in 2005 there were 7.6 divorces per married male age 55-59 and 1.7 divorces per married male age 65 and over.

estimates indicate that (conditional on a set of other demographics) being married reduced the likelihood of (LICO) low income by 10 percentage points in 2006-2008.

Finnie, Gray and Zhang (2012) have looked more directly at how the event of changing marital status can influence whether a person begins using GIS. As expected, women who were married but became single have a higher probability of starting to use GIS – at age 65 or any age after. A smaller, but significant effect is also there for men (see Table 4, column 2 of Finnie, Gray and Zhang 2012). Interestingly, however, men and women who were single and become married are also more likely to start collecting GIS benefits and less likely to stop collecting GIS. This does not imply that marriage results in fewer resources available to seniors. Rather, there are few seniors entering marriage after age 65, and we expect that individuals entering marriage are accounting for the effect of their choice on their finances – particularly their eligibility for GIS.⁸

Again, it appears the GIS system softens the effect of the loss of a spouse. Schirle's (2012) estimates indicate the importance of being married for the likelihood of low income fell substantially as GIS became more generous. This evidence suggests that the RIS is successful at providing at least partial insurance against spousal loss.

Overall, there appears to be a real risk associated with longevity – seniors may outlive their savings and/or their spouses, resulting in fewer resources available to support

⁸ Baker, Hanna, and Kantarevic (2004) demonstrate the sensitivity of marriage decisions on incentives effects within Canada's RIS.

their retirement at older ages. Canada's RIS appears to be successful in at least partially mitigating this risk, however, with the GIS playing a vital insurance role.

C. Risk of Recessions

There are two main risks that arise in a recession. The first is financial return risk, whereby a recession can have serious negative effects on individuals' retirement assets. Second, individuals face a higher risk of unemployment during a recession and this is particularly important for those retirees facing early retirement with inadequate levels of wealth.

Davies and Yu (2012) examine both of these important routes through which recessions may affect retirement income – asset markets and labour markets – and the importance of each route varies across recessionary periods. For example, in the 1981-82 and 1991-92 recessions, unemployment rose much more than in 2008-09. The stock market impact of the 2008-09 recession was much larger than what occurred in 1989-90; while similar to what occurred in the 1981-82 recession.

Unemployment during recessions may have important permanent effects on retirement income. On one hand, an older worker may choose to enter retirement early when facing job loss, taking with him less retirement wealth than originally anticipated. Milligan (2012) shows that indicators of economic hardship are elevated

for those not working at ages earlier than 65—especially so for those without a workplace pension. On the other hand, workers lose out in terms of the years they can make pension contributions – potentially reducing RPP and CPP/QPP payouts. As Davies and Yu (2012) point out, members of defined contribution pension plans lose more when spells of unemployment occur early in their career. Benefits from defined benefit plans are affected if the worker’s years of service do not exceed the required minimum or the spell of unemployment affects their final average pay.

A fall in asset prices during a recession is expected to have important permanent effects as well. All financial assets lose out on annual growth throughout the recessionary period, including defined benefit and defined contribution RPPs. Although defined benefit plans are generally considered less risky from a worker’s perspective, a serious decline in stock values will ultimately result in adjustment to contributions or benefit payments thereby reducing the present value of participating in a defined benefit pension plan.

Davies and Yu (2012) assess the impact of a recession that represents the stylized facts representing the 2008-09, 1981-82 and 1991-92 recessions. Recognizing that many individuals change their behavior in response to recessions, their estimates indicate that the full effect of a typical 2 year recession is an average reduction in retirement income between 5.41 and 5.79%. A 4 year recession has significantly larger impacts – on average reducing retirement income between 7.8 and 9.55%.

Importantly the Davies and Yu (2012) analysis points to the role of public policy in mitigating these risks. Their results suggest an enhanced CPP/QPP (raising both contribution and benefit rates by 50%) could reduce the negative impact of long recessions – so that a four-year recession reduces retirement income by only 6.8%. On the other hand, the creation of PRPPs (which Davies and Yu (2012) assume will be taken up by a large portion of those who do not participate in RPPs and will crowd-out other forms of private savings that offer a lower return) is expected to increase the negative impact of recessions – with a four-year recession resulting in a reduction of retirement income by 8.38-9.95%.

D. Risks in decision making

Many complex decisions need to be made when planning for retirement. The average Canadian may not be well-equipped to fully understand financial risks or the full implication of portfolio or tax decisions.

An important concern raised by Veall (2012) is that low-income seniors face important GIS clawbacks – for every dollar withdrawn from an RRSP, GIS benefits are reduced by 50 cents.⁹ A typical low-income senior would be financially better off if he

⁹ Clawback is a general term used to describe measures that reduce the amount an individual or family receives as a government transfer, by a proportion of their income above a specified threshold. A clawback rate refers to the rate at which the transfer is reduced. Clawback is not a term used by HRSDC when describing such measures.

or she saved in alternative investment vehicles, especially (beginning in 2009) tax-free savings accounts.

Veall's (2012) estimates indicate that a large portion of GIS recipients are not making optimal asset allocation choices. He estimates that about 15% of all seniors receive RRSP income in the same year as GIS income at least once – thus facing much higher marginal tax rates than necessary. He suggest just over 20% of GIS recipients are affected if RRIF income were included in the analysis. Even more simultaneously receive RRSP, RRIF or RPP income – 31% of 66-75 year old GIS recipients.

To summarize our research looked at through this lense of insurance and risk, we find that Canada's RIS is succeeding in mitigating the worst outcomes for those with low incomes entering retirement and those who have unexpected longevity, and this success largely depends on GIS provisions. On the other hand, the current system is doing less well in helping families deal with the complexity of system. Furthermore, the current system is doing less well in helping families face the risks of recessions – especially with respect to uncertain returns on financial assets.

4. Gender and Retirement income

Traditionally, researchers have been concerned that women face greater income risks at older ages. Indeed, the average older woman faces higher risk of low income, especially if widowed. However, the research in the CLSRN project has some perhaps

surprising results on this front. The research indicates that this risk is largely explained by women's labour market histories and that women have been managing this risk relatively well within the current RIS structure.

For example, Finnie, Gray and Zhang's (2012) estimates indicate that single females are significantly more likely to receive GIS than others over the age of 65. This result largely reflects permanent income differences between men and women. That is, the average older woman has a lower income in retirement in part because she had lower lifetime (individual) income (particularly earnings) than the average man. When controlling for permanent income differences, the likelihood that a single female would collect GIS is actually lower than the likelihood that a single male (with comparable permanent income) would collect GIS. Notably, Schirle's (2012) estimates do not show a strong gender effect in predicting the likelihood of having income below LICO (with factors such as age and education accounted for). These results combined suggest that gender differences in GIS receipt largely reflect gender differences in work histories – not differences in longevity or widowhood – and that the GIS helps mitigate the risk of low income for women lacking strong work histories.

For women with stronger employment histories, Finnie and Spencer's (2012) estimates indicate that women actually enjoy higher income replacement rates in retirement. Interestingly, the income replacement rates of women actually appear to increase with age – which would contrast results suggesting that the system is doing a poor job mitigating longevity risk. It is likely, however, that this represents a women's

greater control over income resources as she ages and is more likely to be a widow. The observed increase in income replacement rates does not necessarily represent an increase in resources for consumption.

When thinking of the retirement income available to women, it is important to account for the various resources available to them – consideration of individual income may be too narrow. For example, estimates from Milligan (2012) indicate that 32.4% of non-earner women age 55-64 are able to avoid hardship with their own income sources, while 45.8 of men are able to avoid hardship on their own. The estimates also indicate, however, that women are more able than men to depend on their family members for income allowing a larger portion to avoid hardship.¹⁰ Relying only on other family member's income, 57.5% of women 55-64 would not face hardship. Only 34.6% of men could rely on other family member's income to alleviate hardship.

Of course the importance of women's income for consumption in retirement has been changing over time and may become more important in the future. Schirle's (2012) analysis of income changes suggest that increases in older women's education levels, employer pension coverage and CPP/QPP receipt since the late 1970s have driven a considerable portion of the observed increases in senior family's income.

¹⁰ The authors suggest that reliance on other family members at older ages may be viewed positively or negatively depending on the circumstances of the individuals and their families.

Overall, the RIS seems to be managing well for Canada's women—and with coming cohorts of female retirees much more likely to have a long career behind them it is likely the situation will improve more. While there is not much difference between men and women who survive a long time, the realities of mortality rates mean that more women will be in this situation than men. While extreme bad outcomes have been limited by the existing RIS, continued attention to those living long—predominantly women—is warranted.

5. Lessons for policy

Overall, the research in the CLSRN project on Canada's RIS suggests that most seniors are doing fairly well in retirement. This accords with the findings of Mintz (2009). Where we expand on those previous findings is in our uncovering of which aspects of the RIS are most important in insuring against the risks faced by seniors. Few seniors experience extremely low income under our current system. It appears that the incidence of low income typically reflects low lifetime incomes rather than the implications of unexpected events post-retirement. The GIS appears to do reasonably well in reducing the risks of severe hardship among seniors, keeping most seniors just above the commonly-used low-income thresholds.

Important long-run policy implications follow from the research program. As permanent income has shown to be a significant factor in predicting the risk of low income, policy makers are reminded of the importance of investments made in individuals over the entire life course. For example, investments in the education of

youth typically result in higher employment income and subsequently better retirement incomes. Current investments in education are thus expected to reduce future costs of GIS programs. The projections of Clavet et al. (2012) account for higher future retirement incomes associated with the trends toward higher education among seniors, and their results suggest that higher education will substantially reduce GIS reliance in the future.

The research program has also presented several shorter-run policy implications, in that some gaps remain in Canada's RIS. First, the research by Davies and Yu (2012) indicates that long recessions can result in large permanent reductions in retirement income. Providing workers with opportunities for less risky pension incomes (as one example, the suggestion of an enhanced CPP which provides a less volatile inflation-protected stream of income) would reduce this risk. The introduction of PRPPs is not expected to reduce the retirement income risk associated with recessions – individuals likely to start using PRPPs will face just as much financial returns risk (or potentially more risk) than they had with alternative savings vehicles such as RRSPs.

Second, Veall's (2012) research reveals that seniors face complex policy rules and they risk making financial decisions that are not in their best interest. Governments need to ensure those nearing retirement have the information necessary to make good decisions. In particular, efforts should ensure that GIS recipients do not face such large effective marginal tax rates against investment income. Information campaigns can prove worthwhile. For example, Finnie, Gray, and Zhang's (2012)

analysis of GIS indicate higher entry rates in 2002-2003, following GIS outreach initiatives conducted at the time. Veall (2012) also suggests the possibility of allowing small exemptions of RRSP or RRIF income when determining GIS eligibility.

Third, longevity risk appears to be significant. GIS prevents severe hardship, but is not designed to maintain previous standards of living. The availability of annuities (that can be designed to pay individuals a fixed income for the rest of their life) may prove important in this regard. Recent research by Neilson (2012) suggests several policy levers that could be used to improve the financial market's ability to offer a range of decumulation products (including annuities) to Canadians.

The challenges discussed here are manageable in the short and long run. More importantly, the challenges facing policy makers in the short run appear small relative to the success the RIS has had in helping Canadians cover many of the risks they face when confronting their retirement years.

6. Conclusions

In this paper, we synthesize the research undertaken by the CLSRN team on Canada's RIS. We assess the evidence on how well the system is performing, and in particular how it is helping Canadians with the risks they face. We have examined these risks in light of the RIS objectives for redistribution, savings, and insurance. Our work expands on existing knowledge on retirement incomes in Canada by providing some important

details on which aspects of the RIS are important in helping to insure against the risks faced by seniors.

With respect to the risks that affect redistribution goals, the GIS appears to be one of the most important parts of the RIS. The research has shown that a large portion of seniors rely on GIS to supplement their income, and this program appears central to ensuring that seniors' income is at a level just above standard poverty thresholds. As such, in the presence of the GIS, few seniors face a serious risk of low income. The complex structure of the GIS also gives rise to decision-making risks, however, as evidence suggests many GIS recipients are not fully aware of how GIS clawbacks are structured. There is also evidence that the risks of the death of a spouse are not adequately insured in the current structure of the RIS.

With respect to the earnings replacement goal of the RIS, our findings on replacement rates indicate that the CPP/QPP and defined benefit pension plans appear central to ensuring retirees enjoy stable incomes in retirement that are satisfactory – measured in terms of the income replacement rate they offer. Our findings on risk and the financial markets show that other forms of saving – through standard define contribution pension plans, PRPPs, RRSPs, or other forms of private investments – leave retirees facing serious financial returns risk and longevity risk that markets are currently unable to manage.

We find that arriving at retirement ages with lower lifetime earnings is the best predictor of future economic hardship. Furthermore, recent increases in relative poverty measures appear to reflect a trend towards greater reliance on market incomes in retirement to meet savings goals. With respect to redistribution goals, however, this is not necessarily a concern – the evidence presented here suggests the RIS is doing well at preventing extreme outcomes for those who have poor lifetime earnings, as well as for those who live longer than expected, experience unexpected wealth losses, or who suffer from the death of a spouse.

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Appendix A. Background to Canada's Retirement Income System

Canada's RIS conforms quite closely to the 'three pillars' typology of retirement income systems presented by the World Bank (1994). The first pillar represents the policies that make benefits available to seniors regardless of their employment and income history. The second pillar represents mandatory pension plans that are regulated and whose benefits depend on individuals' work history. The third pillar captures all other voluntary forms of retirement income (typically from private savings) that can be influenced by government policy and legislation.

A. Pillar 1

The main program under the first pillar of Canada's Retirement Income System is Old Age Security (OAS), established by the Federal Government in 1952.¹¹ Prior to this, provincial governments had been more heavily involved in providing benefits to low-income seniors, with legislation from 1927 requiring the federal government to share the cost. In 1952, seniors became eligible for basic OAS pension at age 70. The eligibility age was reduced to age 65 by 1969. OAS was introduced as a demogrant, meaning that age was the only criterion applied (in addition to residence requirements). A person qualifies for the full benefit if they have lived in Canada for 40 years after age 18, and (since 1977) a reduced benefit if they lived in Canada for at least 10 years, but fewer than 40 years. The basic OAS pension is treated as taxable income. A benefit clawback – specifically the Old Age Security Recovery Tax – was introduced in 1989, which reduces the basic OAS pension paid to higher income seniors by 15 cents for each dollar of income over a threshold. The OAS pension amount does not depend on family status.

As of October 2012, an individual would receive OAS benefits up to \$544.98 per month.¹² The benefit clawback applies to any (individual net) income above \$69,562, so that the benefit is fully clawed back for incomes above \$112,966. Benefits under the OAS program and the benefit clawback threshold are indexed to changes in the Consumer Price Index (CPI).

¹¹ The description in this section is generally derived from the information provided by the Government of Canada at

<http://www.servicecanada.gc.ca/eng/isp/oas/oasoverview.shtml>

¹² <http://www.servicecanada.gc.ca/eng/isp/oas/oasrates.shtml>

In addition to OAS, low-income seniors may qualify for the Guaranteed Income Supplement (GIS, established in 1967) and the Allowance/Allowance for Survivor (ALW/ALWS, established in 1975). The GIS is a family income-tested benefit, available to OAS recipients over the age of 65. A clawback rate of 50% is applied against most forms of family income – excluding OAS benefits.¹³ Since July 2011, a GIS ‘top-up’ is also provided to seniors with incomes below \$2000 (or \$4000 for a couple) and this top-up is subject to a higher clawback rate.¹⁴ GIS benefits are not taxable.

As of October 2012, a single individual (or an individual whose spouse was not eligible for OAS or the Allowance) could receive up to \$738.96 per month in GIS benefits, with benefits fully clawed back when income reaches \$16,512. A married couple over 65 (so that both receive OAS) could receive up to \$979.96 per month, with the benefits fully clawed back when income reaches \$21,840.

The ALW and ALWS are income tested, like the GIS, providing benefits to 60-64 year old spouses of GIS recipients (ALW) or to those whose spouse has died (ALWS). These benefits provide an amount equal to the OAS monthly benefit plus the GIS benefit provided to a married individual. Benefits are subject to a steeper clawback than the GIS, with a 75% clawback rate applied to the ‘OAS component’ of the Allowance.

As of October 2012, a married couple with one spouse age 60-64 and one age 65 or older could receive up to \$489.98 per month in GIS and \$1034.96 in Allowance. Note that \$544.98 of the Allowance benefit (referred to as the ‘OAS component’) is subject to the 75% benefit clawback. This couple’s GIS and Allowance benefits are fully clawed back when family income (excluding the OAS pension and the first \$3500 of employment income) reaches \$39,600.

B. Pillar 2

The second pillar of Canada’s RIS consists of the Canada Pension Plan (CPP) and the Quebec Pension Plan (QPP). These plans represent the largest component of the RIS, which is funded by the contributions of employers, employees, the self-employed, and investment revenues. The CPP and QPP provide a defined benefit retirement pension,

¹³ Before 2008, 20 percent of earned income up to \$2500 was exempt from the clawback. Since 2008, \$3500 of employment income was exempt from the GIS clawback.

¹⁴ <http://www.servicecanada.gc.ca/eng/sc/oas/gis/budget2011.shtml> and <http://www.servicecanada.gc.ca/eng/isp/oas/oasrates.shtml>

and the pension amount depends on individuals' work histories.¹⁵ Roughly speaking, the plans are designed to replace 25% of career earnings up to the average industrial wage. The plans also provide survivor's pension benefits, and a small death benefit. The two plans are structured similarly, though administered separately by the federal government for the CPP and the Quebec government for the QPP.¹⁶

The calculation of the monthly benefit is the product of three parts – each of which has changed over time. The first part represents an individual's average pensionable earnings during their contributory period – the time between 1966 or age 18 (whichever is later) and the month before an individual begins to receive a CPP/QPP pension, turns 70, or dies. If retirement is delayed past age 65, those years after 65 only enter the contributory period if it results in an increased benefit. Several months are dropped from the contributory period, including months in which a disability benefit was received, months spent caring for a child under age 7, and a percentage of lowest-earning months. Until 2011, the lowest 15% of earning months could be dropped. As of January 2012, 16% may be dropped. As of January 2014, 17% can be dropped.

For each month in the resulting contributory period, the ratio of earnings to 1/12 of the Year's Maximum Pensionable Earnings (YMPE) is calculated, and capped at one. The average of the ratios is a number between 0 and 1 representing the average share of earnings covered by the pension plan over his or her career. Someone who on average earned around half of the YMPE would receive a number close to 0.5; someone who always earned more than the YMPE would receive a 1.0. This number enters the pension benefit formula, as discussed below.

The second part of the benefit calculation updates the earnings history to the level of earnings prevailing at the time the person takes the retirement pension. Until 1997, this was accomplished by taking the three-year average of YMPE (inclusive of the year benefits are claimed). CPP/QPP reforms changed this so that by 1999 a five-year average of YMPE is used in the benefit calculation. Given that the YMPE increases with time, this change from a three-year to a five-year average lowered slightly the benefits received.

The third part of the calculation adjusts the pension for the age at which the person takes the retirement pension by applying the pension adjustment factor. This is similar to an actuarial adjustment. An individual can receive their full (unadjusted) pension benefit if they take up their CPP benefits at age 65. For individuals taking the

¹⁵ The description here largely follows Milligan and Schirle (2008).

¹⁶ The CPP is administered under joint federal-provincial stewardship.

retirement pension as early as age 60, a downward adjustment factor is applied. This option for taking the retirement pension as early as age 60 was first introduced in the QPP in 1984 and later introduced to the CPP in 1987.¹⁷ Until December 2011, the full pension was discounted by 0.5% per month of retirement before age 65. A new downward pension adjustment factor of 0.6% per month is being phased in over a five year period starting January 1, 2012. For retirement after age 65, an upward adjustment factor is applied. Until December 2010, the full pension was increased by 0.5% per month for retirement after age 65. A new upward pension adjustment factor of 0.7% per month is being phased in over a three year period starting January 1, 2011.

The resulting monthly benefit is then a product of these three parts multiplied by 25% and divided by 12:

$$\text{Monthly benefit} = (\text{average earnings ratio}) \times (\text{average YMPE}) \times (\text{adjustment factor}) \times 0.25 \times (1/12)$$

Once initiated, the monthly benefit is updated for changes in the CPI.

Several other changes to the CPP and QPP rules are taking effect in 2012, with full implementation by 2016.¹⁸ The Work Cessation Test has been eliminated, so that contributors may take-up CPP pensions without any work interruption. For those taking up benefits under age 65, further contributions are mandatory for those who continue to work, but will result in a Post-Retirement Benefit (PRB) added to their CPP retirement pension. Those aged 65-70 can choose not to make contributions.

The QPP has deviated slightly from CPP in recent amendments.¹⁹ For example, the new higher downward pension adjustment factor of 0.6% will not fully apply to lower-income seniors. The new upward pension adjustment factor of 0.7% will be implemented fully in 2013.

C. Pillar 3

The third pillar of Canada's RIS represents income derived from various forms of private and voluntary retirement savings. For this pillar, government's role relates to

¹⁷ See Baker and Benjamin (1999) for some details.

¹⁸ See http://www.hrsdc.gc.ca/eng/oas-cpp/legislation/bill_c51/index.shtml

¹⁹ See <http://www.budget.finances.gouv.qc.ca/Budget/2011-2012/en/documents/Retirement.pdf>

the tax treatment of different sources of income and legislation regulating each of the savings vehicles.

Employer-sponsored pensions are a central component of the third pillar. While sometimes referred to as 'private pensions', a significant proportion of those who are members of employer-sponsored plans works for public-sector employers. Most employer-sponsored plans in Canada take the form of Registered Pension Plans (RPPs) that offer a defined benefit – whereby the monthly benefit paid to retirees is a set dollar amount, typically based on the individual's years of service and some measure of their career earnings. This defined benefit may or may not be indexed to changes in the CPI. A smaller (though growing) portion of Canadians are covered by defined contribution RPPs, which provide benefits based on the contributions made by employers and employees, and the investment income earned on those contributions. We discuss trends in RPP coverage in section 3.

The Federal Government is involved in RPPs to the extent that RPP provisions are defined by the Income Tax Act and the Income Tax Regulations. Contributions to an RPP are tax deductible, and benefits received in retirement are considered taxable income though a tax credit is applied to the first \$2000 of pension income. Since 2011, a tax deduction for pension income assigned to a spouse is also allowed. Provincial governments are involved in setting the legislation and regulations that guide the administration of pension plans (that fall within the provincial jurisdiction). This includes benefits, contribution requirements, and provisions for winding up pension plans.

A new type of employer-sponsored pension plan is being introduced in Canada – the Pooled Registered Pension Plan (PRPP), which will be a multi-employer pension plan administered within the private sector. The Federal government introduced legislation enabling the creation of PRPPs in November 2011 and will be amending the Income Tax Act and Regulations.²⁰ Employer participation will be voluntary. Conditional on employer participation, an employee may retain the option of setting his or her contribution rate to 0%. At the provincial level, legislation will be introduced to guide the administration of these plans.

Registered Retirement Savings Plans (RRSPs) are another savings vehicle available to Canadians. Contributions to RRSPs can be made by individuals, and are tax deductible (up to a maximum amount). Group RRSPs are often considered an alternative to more

²⁰ Background to PRPPs can be found at http://www.fin.gc.ca/n11/data/11-119_3-eng.asp.

traditional RPPs, whereby employers can make contributions for their employees. The tax treatment of individual and group RRSPs are the same. The Federal Government is involved in RRSPs to the extent that tax treatment provisions are defined by the Income Tax Act and the Income Tax Regulations. Provincial governments are not directly involved in RRSP provisions.

Tax Free Savings Accounts are a recently introduced savings vehicle. Individuals can contribute up to \$5,000 per year to registered TFSA's in private sector financial institutions, which are typically characterized as low risk investment vehicles (such as GICs). Unlike RRSPs, contributions are not tax deductible. Also unlike RRSPs, however, withdrawals from TFSA's (representing the principal or interest earned on these investments) are not included in taxable income. As such, income earned from a TFSA does not affect individuals' GIS and Allowance benefit amounts, nor is it subject to the OAS Recovery Tax.

Combined, the various aspects of the Canadian RIS stand in sharp contrast to the more monolithic programs common in Europe and the United States. Ideally, having so many policy instruments provides the flexibility to adjust the system to differing demands placed on it. On the other hand, the multiplicity of policy instruments available creates the risk of overlap, or even having different instruments interacting in a negative way.

Appendix B. The Challenges for Canada's RIS Research Papers

In this appendix we provide summaries of each of the research papers in the "Challenges for Canada's Retirement Income System" Research Program. The summaries provided below were prepared by the respective researchers.

Clavet, Nicholas James, Jean-Yves Duclos, Bernard Fortin, et Steeve Marchand (2012), "Sources de revenu de retraite au Québec 2004-2030: une analyse de microsimulation."

Ce rapport présente une première version du Modèle de Micro-Simulation de l'Université Laval (SimUL) visant à simuler l'évolution de divers indicateurs reliés aux changements démographiques et aux revenus de retraite pour la période 2004-2030 au Québec. SimUL prévoit que la croissance importante dans le niveau d'éducation des individus dans le temps influencera significativement les revenus futurs de retraites. Les revenus de pensions privés ainsi que les prestations de la Régie de rentes du Québec (RRQ) des individus de 65 ans et plus augmenteront d'environ 1 à 3% par année en termes réels de 2010 à 2030. Le modèle prévoit également que la proportion des femmes admissibles aux prestations de RRQ passera d'environ 80 à 99% de 2004 à 2030. Les nouveaux retraités seront ainsi plus riches que les retraités actuels, ce qui aura comme effet de diminuer considérablement la proportion des individus admissibles aux prestations de Supplément de revenu garanti (SRG), qui passera de 39,8% en 2010 à 24,4% en 2030. Les dépenses liées aux régimes publics de retraite augmenteront fortement de 2010 à 2030. Le coût total des prestations de Sécurité de la vieillesse pour le Québec passera de 6 milliards à 11 milliards, celui des prestations de RRQ passera de 8 milliards à 18 milliards, mais celui des prestations de SRG se stabilisera aux alentours de 1,6 milliards. SimUL prévoit finalement que le coût, toujours pour le Québec seulement, de la prestation complémentaire de SRG annoncée par le gouvernement du Canada dans son plan d'action économique de 2011 demeurera stable à environ 15 millions de dollars.

Davies, James B. and Xiaoyu Yu (2012), "Impacts of Cyclical Downturns on the Third Pillar of the RIS and Policy Responses."

The impacts of cyclical downturns on the third pillar of Canada's retirement income system are analyzed, taking into account asset price changes, increased unemployment and early retirement effects, using both a non-behavioural approach and allowing behavioural change according to a life-cycle model of saving and consumption. The

history of cyclical downturns and retirement assets in Canada since 1980 is reviewed and impacts of the 2008-09 recession on the value of household assets, including pension rights, are discussed in detail using simulations based on the 2005 Survey of Financial Security. It is estimated that the 2008-09 recession temporarily reduced equity in Defined Contribution (DC) retirement plans and the underlying funds of Defined Benefit (DB) pension plans by 26-27%. Average family net worth declined 11% but rebounded in 2010. Effects on individual families differed greatly, depending on portfolio composition and asset sales or purchases and their timing. The analysis is translated into effects on expected retirement incomes for a subsample of older workers aged 50-64. Extending the results to cover full careers, it is found that DB pension income may be reduced by up to 20-25% if unemployment spells recur cyclically and happen to hit near the end of the career. Forced early retirement of 8-10 years can reduce DB pensions by up to 50%. Unemployment and early retirement effects on DC retirement incomes tend to be smaller, but DC equity and incomes can be strongly affected by cyclical asset price declines occurring close to retirement. Finally, how the retirement income effects of cyclical shocks over the career could potentially be affected either by enhancement of the CPP/QPP system, or by widespread use of Pooled Retirement Pension Plans (PRPPs) is examined.

Finnie, Ross, David Gray, and Yan Zhang (2012), "The Receipt of Guaranteed Income Supplement (GIS) Status Among Canadian Seniors—Incidence and Dynamics."

This paper consists of a statistical and econometric analysis of the both the incidence rate for receiving Guaranteed-Income Supplement (GIS) benefits among age-eligible Canadians as well as the dynamic aspects. The raw estimates for the incidence rate range from 30.5 % to 34 %. The age profile rises monotonically from 31.2 % at age 65 to 32.6 % at age 67, and it increases rapidly after age 70. This rising trend still holds after separating numerous different cohorts of workers. With or without the inclusion of control variables, both men and women with partners have lower incidence rates. The raw incidence rates for immigrants are much higher than is the case for native-born Canadians, although some of that gap is driven by their tendency to receive lower levels of permanent income. All other factors held constant, there appears to be a slight dip in the incidence rate for the 2005 and 2006 entry cohorts (i.e. those who attain age eligibility). Rural areas and areas with relatively low population densities have higher rates than urban areas. Ontario has the lowest incidence rate, while Newfoundland has by far the highest.

The gender-based analysis yields remarkable disparities. After netting out the effects of the variables related to permanent income, single women are slightly less

likely than single men to receive GIS benefits, but women with partners are much less likely than their male counterparts to receive them. The estimates for our proxy variable for permanent income are as expected: a strongly negative, non-linear, monotonic relationship. Those who were previously self-employed are less likely to benefit even after controlling for the effect of permanent income. A similar finding was discerned for unionized workers, which is partially attributed to the effect of having a job-related pension. Those individuals who contributed to RRSPs and/or RPPs are less likely to receive GIS benefits, *ceteris paribus*.

The analysis of the dynamics of GIS receipt patterns indicate that some beneficiaries do not receive benefits when they first reach the age of eligibility of 65 years, but then subsequently enter the regime at older ages. While almost three quarters of the group of recipients between 66 and 70 years of age display persistent use, a significant minority do not rely on GIS benefits over that entire window of eligibility. Over 81 % of the cohort of 66-year-old individuals (who recently met the age criterion) did benefit over the entire window of eligibility (i.e. when they were between 66 and 70 years old). The univariate average annual *entry* rates by age among those eligible for GIS benefits display a saucer-shaped profile, falling from 4.2 % for 67-year olds to 3 % for those in their mid 70s, and then rising to 5.8 % by age 90. We discerned a spike in the entry rate in the year 2002, which corresponds with the 'GIS outreach initiative'. The univariate average annual *exit* rates by age among those receiving GIS benefits are calculated at 8 % for 67 year-olds, and they decline monotonically thereafter. The probability of exiting conditional on receipt of GIS benefits during the preceding year declines monotonically between the ages of 67 and 76, and subsequently levels off. Relative to native-born Canadians and long-time immigrants, more recently arrived immigrants have a very high probability of entry. Women who transit from married to single status are more likely to enter the GIS regime.

The hazard model for the risk of exiting the GIS regime conditioned on the duration of the on-going spell of GIS receipt reveals a sharp pattern of negative duration dependence; leaving the GIS rolls becomes less and less likely the longer that spell lasts. The hazard model for the risk of entering the GIS regime conditioned on the particular event of not receiving the benefit when one is initially eligible (i.e. at age 66), which we label 'delayed entry', becomes less and less likely the older the individual becomes.

Finnie, Ross and Byron G. Spencer (2012), "How do the Level and Composition of Income Change after Retirement?"

The analysis is based on Statistics Canada's Longitudinal Administrative Databank (the *LAD*), a tax-based annual databank on individuals covering the period 1982-2008. The *LAD* file has a number of unique strengths that allow us to address the questions of interest here. First, the data are longitudinal, which means that the authors can track individuals for up to 27 years; the authors focus on comparisons of the years before and after retirement. Second, the income information is detailed and accurate; that allows the authors to identify retirement using an earnings-based measure, and then follow with assurance the income measures of interest. Third, the period covered is long enough to allow the authors to track incomes for a number of different cohorts. Finally, since the sample sizes are extremely large, deriving from a sample frame which includes 20 percent of the tax-filing population, and closely representative of the total population, the authors are able to address issues that could not otherwise be considered.

The starting point for the analysis is an assessment of who has retired. All those who had significant employment income in their early 50s are deemed to be candidates, and retirement is judged to have occurred when the decline in individual earnings from employment is sufficiently large (at least 90 percent) and sustained (for at least two years). This assessment is made for every tax filer who reached age 50 in 1982, 1987, 1992, and 1997.

Based on the study's measure of retirement, the authors demonstrate that men and women have remarkably similar age patterns of retirement; that, in part, reflects the longitudinal employment-income indicator of retirement including the restriction of the concept of retirement to those who were at risk of retiring, in that they showed evidence of substantial labour force attachment when they were in their early 50s. While the age patterns have changed somewhat over time, from one cohort to another, they have done so in unison for men and women. As one example, the proportion of young (under 60) retirees was notably higher in the 1987 and 1992 cohorts than in the 1982 cohort, but that increase was largely reversed for the 1997 cohort. Even so, as a result of a twist in the age pattern, the proportion retired by age 66 has decreased over time. For males it was about 10 percentage points lower for the 1997 cohort than for the 1982 cohort, and for females about 8 points lower.

For those who retired the authors compare income before and after retirement, and calculate various measures of income replacement, most of which are novel because

they take advantage of the lengthy data period that is available in the *LAD*. The authors find that while incomes drop sharply at the time of retirement, the longer term rates of income replacement are relatively stable over the retirement period, on average, are somewhat higher for men than for women, and differ little from one cohort to the next. Since there is variation across cohorts in income levels and retirement patterns, the relative constancy of the income replacement rates may suggest that individuals plan their retirement so as to achieve target income replacement ratios, taking into account their own prior savings behaviour and the income available from publicly provided income sources, including OAS, C/QPP, and GIS.

Nine sources of income are analysed before and after retirement, using both descriptive and regression-based approaches. The descriptive analysis shows how incomes in retirement are dominated by three specific sources: OAS, C/QPP, and private pensions, with private investments running a distant fourth. Other sources, including income from RRSPs, GIS, and other public support programs, are of relatively minor importance overall.

The authors derive age-income profiles for individuals with representative characteristics that show how income from each source varies over the retirement period. That is done for selected ages of retirement, for each of four cohorts, and separately for males and females. The profiles would shift up or down for individuals whose mid-career income, savings behaviour, location, or language differed from the reference case. By way of example, having higher employment income when 50-51 is positively related to investment and pension income in retirement, negatively to GIS and other forms of public support, and not related to OAS, the universal benefit, except for relatively minor clawback effects.

McDonald, Ted and Christopher Worswick (2012), "Retirement Incomes, Labour Supply and Co-Residency Decisions of Older Immigrants in Canada: 1991-2006."

The incomes, hours of work and co-residency behavior of older immigrants in Canada are analyzed using data from the confidential master files of the Canadian Census for the years 1991, 1996, 2001 and 2006. Older immigrants in Canada have lower incomes than the Canadian-born of the same age range and this difference is concentrated in the immigrants who arrived older than age 50. However, there is also evidence that the effects of the lower incomes on the welfare of these immigrants are mitigated to a certain extent through co-residency, presumably with their younger relatives already resident in Canada. Immigrants reside with, on average, more family

members than do the Canadian born. A clear pattern is present of immigrant groups with relatively low average incomes being the ones living in larger economic families.

Immigrants who arrive at younger ages (25-49) are more likely to be employed and if they are employed, they tend to work longer hours than their Canadian born counterparts. For immigrants who arrived after age 50, their employment decisions do not differ greatly from their Canadian born counterparts; however, if they work, their hours of work tend to be higher. Immigrants have relatively less income from private pensions compared with the Canadian born. Immigrants from non-traditional source countries have low levels of CPP/QPP income relative to immigrants from traditional source countries or the Canadian born. In terms of OAS/GIS income, immigrant men who arrived at age 60 or older have in the order of 50% lower incidence of receiving pension income than do immigrants who arrived at younger ages. In contrast, for immigrant men who arrived age 25-49, we do not see large differences in their incidence or level of income received from OAS/GIS relative to otherwise similar Canadian born men.

Milligan, Kevin (2012), "Employer-provided pensions, incomes, and hardship in early transitions to retirement."

Countries around the world are struggling to respond to the increasing cost of their public retirement income programs due to the pressures of population aging. One of the responses pursued in many countries has been an increase in the age of eligibility for retirement benefits. For example, the United States has been slowly increasing the full retirement age from 65 toward a target of 67 for the cohorts born in 1960 and later. Germany has plans to move their retirement age from 65 to 67 between 2012 and 2029. Similar proposals in France in 2010 sparked vigorous demonstrations. In Canada, the March 2012 federal budget announced plans to make a transition in the age of eligibility for Old Age Security from age 65 to 67, starting in 2023.

One concern with a move to later ages of eligibility for public retirement benefits is the welfare of those who retire before the age of eligibility. This paper addresses the wellbeing of those making early exits from the workforce by studying the extent, characteristics, and impact of such exits in Canada. In particular, three questions are addressed. First, who retires early? Second, what are the income patterns among early retirees? Third, how do early retirees avoid economic hardship? The paper approaches these questions through the use of the Survey of Labour and Income Dynamics, which contains a rich description of the labour market activity and the incomes of a large sample of Canadians.

Several important findings emerge. Non-work among those approaching the ages of public pension eligibility is not strongly related to demographic or workplace characteristics, although employment related pensions do have some explanatory power. The incomes of those in this age range show an increasing compression as age 65 approaches, but there remain considerable differences for those who have and do not have employment related pensions. Among those not working, spouses and pensions have the best predictors of having low income or not. Finally, the author calculates that around 77 percent of females and 73 percent of males who are not working in these pre-eligibility age ranges are able to avoid low-income status, and that the most important factor for this avoidance is the presence of income from other family members. Health matters as well. For males, employment related employer-sponsored pension income is also a large factor in avoiding low incomes.

Schirle, Tammy (2012), "The Incidence of Low Income Among Seniors in Canada."

This study examines trends in senior poverty and income, aiming to measure the extent to which various factors have played a role. Data from the Survey of Consumer Finances (SCF) and the Survey of Labour and Income Dynamics (SLID) are used to document trends in senior's equivalent economic family after tax income and subsequently conduct a decomposition of senior poverty rates and income deciles representing the lower end of the senior income distribution.

Senior poverty rates based on the Elderly Relative Poverty Measure (ERPM) fell from 40 percent in 1977 to only 23 percent in 1982, reached only 7 percent in 1995, and then increased to 17 percent in 2008. Senior poverty rates based on the after-tax Low Income Cut-Off (LICO) followed a similar trend until the mid-1990s, at 30 percent in 1977 and 8.6 percent in 1995. In contrast, however, the LICO based poverty rates continued to fall – reaching 5.6 percent in 2008. It is clear that the depth of poverty was reduced for seniors after the 1970s. However, many seniors have income that is just above and below standard poverty thresholds.

Underlying the poverty rate trends are steady real increases in the incomes of seniors in the lower end of the income distribution. From the late 1970s until the early 1990s, incomes at deciles in the lower part of the senior income distribution increased at a much higher rate than incomes at the top of the senior income distribution and the incomes of the working age population. Since the mid-1990s, however, incomes representing the lower part of the senior income distribution have not kept pace. This underlies an increase in relative, though not more absolute, measures of poverty.

What explains the remarkable reduction in elderly poverty since the 1970s? To answer this question, this study examines the extent to which changes in seniors' characteristics and income sources may be associated with changes in income and poverty. The analysis conducted in this study helps us gauge the relative importance of retirement income policy and individual characteristics or behavior as factors contributing to changes in senior income and poverty.

Several factors were shown to be important for explaining changes in senior income and poverty. With respect to individual characteristics, increasing education levels among seniors have consistently driven increases in income and reductions in poverty rates. In contrast, increases in independent living and urbanicity have placed downward pressure on income. Working against this downward pressure, however, are changes in the extent to which characteristics influence income and the likelihood of poverty. This is referred to as "structure effects" in this study, and the results reflect a diminished role for market forces in retirement income between the late 1970s and mid 1990s. More recently, however, market incomes appear to be playing a great role, driving increases in income and relative poverty measures.

The following key points are drawn from the empirical analysis:

- Expansion of Canada's public pensions over the 1970s and 1980s can explain the majority of the increase in the incomes of seniors at the low end of the income distribution over that period, generating the sharp decline in senior poverty rates.
- Retirement income policy regimes influence the extent to which market incomes determine seniors' well-being, recognizing there is a need to distinguish between relative and absolute levels of well-being.
- Policies that influence investment decisions and labour market outcomes early in the life cycle will shape well-being at later stages of the lifecycle.
- The context in which we observe seniors constantly changes and this is important for policy affecting future cohorts of seniors.

Veall, Michael R. (2012), "Estimating the Number of Guaranteed Income Supplement Recipients Who Have Mistakenly Saved in Registered Retirement Savings Plans and Registered Pension Plans."

The Guaranteed Income Supplement (GIS) has made an important contribution to the drastic reduction of senior poverty in Canada (e.g. Veall, 2008). However, transfer programs by their nature create distortions, and in the case of the GIS, these can be magnified by an interaction with the Registered Retirement Savings Plan (RRSP) program. Indeed Shillington (2003) argues that a large number of seniors are

making RRSP contributions in error because they will become GIS recipients in retirement. In that case, retirement RRSP withdrawals will be subject to GIS phaseout of at least 50 per cent, and in a surprisingly large number of cases to personal income tax as well. Hence the effective rate of return will commonly be lower than the rate of return that could have been obtained using the same savings vehicle outside an RRSP. Negative rates of return are easily possible.

Those about to receive GIS would most commonly be made financially better off if they cashed all RRSPs at age 64 to avoid the GIS phaseout. In principle it is possible that a GIS recipient, despite the phaseout, could retain all her/his RRSP saving and withdraw it at the slowest legal rate with a financial result superior to saving outside an RRSP. The study uses a number of scenarios to consider this alternative and shows that an RRSP advantage requires a high enough personal income tax rate at contribution time, a zero or low personal income tax rate at time of withdrawal, a reasonably high rate of return and a long time period. It is an unlikely scenario to apply to many GIS recipients.

Shillington (2003) estimates that 32% of seniors are making an error by saving in RRSPs. His estimate is based on the 1999 *Survey of Financial Security* (Statistics Canada, 2001) where he calculates “retirement savings” as the sum of the value of RRSPs and the estimated value of Registered Pension Plans (RPPs). He finds that 32% of “near-senior” households (households where the older spouse is age 55 to 64) have retirement savings greater than zero but less than \$100,000. He chooses \$100,000 because “an annuity purchased with \$100,000 will pay roughly \$10,000 per year (varying with age, sex, and type of annuity), which is generally not enough to make a senior ineligible for GIS” (Shillington, 2003, footnote 5).

The Shillington estimate is likely high. Most importantly, he considers the estimated value of RPPs when considering saving. Given that for saving to be a mistake it must be discretionary, this is arguable. Most people would not regard RPP saving as discretionary in the same sense that RRSP saving is: RPP contributions are made by employers and employees in an employment context and a single employee cannot opt out, even if it would be in her/his financial interest to take the same contributions and save them in another form. On the other hand, there may be a discretionary element in that defined contribution RPPs typically allow lump sum withdrawal at age 64 (as do group RRSPs). Defined benefit RPPs sometimes have a cashout provision upon retirement, but it is rare.

The empirical part of this paper examines the Shillington estimate by using the Longitudinal Administrative Database, which allows the anonymous use of personal income tax microdata based on a 20% sample (currently over 5 million records per year). The author presents findings for the years 1992 to 2008. The value of RRSP income in the LAD unfortunately does not include income from Registered Retirement

Income Funds (RRIF), which are a common way to arrange RRSP withdrawals. Some key estimates are:

1. In any given year, about 8% of the couples, 3% of the single women and 3% of the single men who receive GIS receive RRSP income (not including RRIF income) and are therefore subject to GIS phaseout. The corresponding numbers for those who *in addition* pay personal income tax on their RRSP income are 5%, 2% and 2% respectively.
2. RRSP income (not including RRIF income) for GIS-receiving couples has fallen to about 6% of GIS income in 2008 from about 9% in 1992. For single men and single women, RRSP income is about 3% of GIS income, with less variation over the 1992 to 2008 period. Personal income taxes of GIS recipients in 2008 were about 2% of GIS income for couples and less than 1% of GIS income for singles.
3. In the LAD, RRIF income is added to income from RPPs as a single variable. Close to 50% of couples, 30% of single women and 30% of single men receiving GIS have RRIF/RPP income and many pay personal income tax. For GIS recipient couples, RRIF + RPP + RRSP income equals about 60% of GIS income for couples and about 30% for each of single women and single men.
4. Using special estimates provided by Statistics Canada, it is possible to estimate RRSP + RRIF income, although it is not possible to separate it by couples, single women and single men. The author estimates that about 10 to 12% of all GIS recipients receive such income, approximately twice the number of recipients of RRSP income alone.
5. The RRSP income/GIS receipt histories of all those between 65 and 76 in the year 2008 were examined from age 60 on. About 15% of seniors receive GIS and RRSP income in the same year at least once in their lives and hence experience the phaseout. Robustness analysis suggests that this number might be approximately halved if we only considered those who received \$2000 of GIS and \$2000 of RRSP income in the same year. But the numbers would be larger if RRIF income were included and indeed would about double if RRSP, RRIF and RPP income were included. These values approach the Shillington estimate, although to emphasize it is not clear that RPP contributions and incomes in most cases are sufficiently discretionary as to indicate that an individual can have made an error by saving in such form.

Should the system be changed, to mitigate the consequences of RRSP saving in error? Some would argue that it has with the introduction of Tax Free Savings Accounts (TFSAs), income from which does not lead to GIS phaseout. But given there are existing RRSPs, possible policy options include:

1. Sending information to all those approaching age 65 with an explanation about the GIS, its possible adverse interaction with RRSP withdrawals and the alternative of TFSAs.

2. Consideration of an annual exemption of some RRSP income and perhaps RPP income from the GIS calculation. The study provides a very rough estimate that an RRSP/RRIF exemption of \$1000 per year could cost the federal treasury \$100m, a significant sum although a small fraction of the total annual cost of GIS of roughly \$9b. This estimate is not offered for its accuracy but rather as a ballpark magnitude to help determine whether a more accurate calculation is worthwhile using HRSDC administrative data, which are far better suited to this task.