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RETIREMENT INCOME SECURITY REFORM: RUSH PRUDENTLY, DON'T RUN BLINDLY

HIGHLIGHTS

- **The majority of retirees are maintaining their standard of living after leaving the workforce. However, about 20-25% of current retirees are not able to replace an adequate amount of their pre-retirement income.**
- **Forecasts of the personal savings rate and household balance sheets suggest that the 'at-risk' population of retirees will increase in coming decades.**
- **Detailed analysis points to middle-income Canadians, without pensions, as being the most vulnerable.**
- **Better and greater data, as well as more research, is needed to understand why individuals are saving inadequately.**
- **Reforms to the retirement income security system are needed, as is improved financial literacy.**

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Canada's retirement income security system has come under increasing scrutiny. Declining personal savings rates, rising household debt levels, volatility in asset markets, pension funding deficits, and declining employer pension coverage have all contributed to the worries about whether retirees will face a significantly lower standard of living upon leaving the workforce. The anxiety about the retirement income system has prompted policy-makers to consider reforms and this has led to a variety of high-quality research papers.[1]

The recent studies suggest that there is no pension crisis in Canada at the moment. The incidence of seniors in poverty is very low and the vast majority of retirees are maintaining their standard of living. However, a significant minority, perhaps 20%-25% of seniors, are not meeting the traditional benchmark of 60% to 70% replacement of their pre-retirement income. The greatest 'at-risk' population is those with annual pre-retirement incomes of $30,000 to $80,000.

There are, however, two key limitations to much of the recent research. First, the poor state of the available information on the saving and wealth accumulation practices of Canadians mean that it is not evident why some Canadians are failing to save adequately. Second, the vast majority of the recent research is backward looking. The situation of current retirees is a product of higher savings rates of the past, solid financial asset returns prior to 2001 and greater probability in the past of having permanent full-time employment that likely came with desirable pension benefits. The issue for policy-makers is not the state of current retirees, but future ones.

In this paper, we hope to add to the national debate on the adequacy of the Canadian retirement income system by addressing these limitations. Throughout, we highlight where more information is needed to help form sound policy. An effort is also made to demonstrate that it is essential that policy-makers understand the experience of different generations of Canadians at various income levels in order to properly diagnosis the problem. Forecasts are made of personal savings rates and personal balance sheets to demonstrate the increasing likelihood of more seniors experiencing a drop in their standard of living in the future. Finally, a simulation of income replacement for future retirees by age cohort and income levels is presented. The analysis suggests that far more lower-middle income Canadians (roughly those with incomes in the $30,000 to $60,000 range) will experience a decline in their standard of living over the coming four decades.

Policy-makers should pursue a "rush prudently, don't run blindly" approach to reforming the Canadian retirement income system. First, additional resources should be dedicated to collecting better information and doing additional analysis on the savings behaviour of Canadians so that targeted policy actions can be implemented. Second, a national financial literacy strategy should be implemented. Third, there are a number of improvements that can be made to the retirement income system on the grounds of efficiency and fairness; but, while these changes are very beneficial, they don't target the 'at-risk' population. Fourth, it is likely that future research in this area will confirm that more seniors will face a decline

in their standard of living in retirement, and, in particular, the 'at-risk' group of middle income Canadians will increase quite significantly. Moreover, the analysis presented below makes a compelling case that researchers are likely to find that the majority of the vulnerable retirees are those without a pension. During the recent policy debate, a number of options have already been proposed that would help improve income replacement in retirement, including: an enhanced CPP/QPP, a public supplementary pension plans for workers without employer plans, and changes to the current legislation to allow multi-employer pension plans and to allow private financial institutions to provide pensions without any tie to employers. All of these options have pros and cons. The enhanced CPP/QPP benefits all workers, but it does not target the 'at-risk' population. The public supplementary pension plan has the advantage of permitting default enrolment of workers without pension coverage. Additional private pensions would also permit more savings options. Ultimately, our intuition is that greater pension coverage is desirable, but it could take many forms. Further research should inform the ultimate, precise design.

Canada's retirement income system

Canada's retirement income system is comprised of three pillars: 1) income-tested old-age transfers, 2) contributory but mandatory public pensions, and 3) individuals' tax-favoured registered self-saving accounts and employer-provided pensions. The pillars broadly correspond to the three goals of a retirement income system. Government transfers guard against old-age poverty. Public pensions compel employees to save during working life to ensure some consistency of income when they retire, while also providing pooling of risks around investment returns and mortality. The self-saving accounts and employee pensions provide individuals with the means to save for retirement, while also providing autonomy to tailor their life-cycle spending-saving profile and investment strategy to their own preferences and risk tolerance.

In Canada, the Old Age Security (OAS) and Guaranteed Income Supplement (GIS) programs together constitute the first pillar, intending to provide a guaranteed income floor for all Canadians. Introduced in 1952, OAS provides a basic monthly benefit to Canadian citizens and residents aged 65 and over who have low or modest incomes. High-income seniors are eligible and receive the basic benefit, but are required to payback 15% of every dollar over a certain threshold ($66,335 for 2009). The OAS benefit is completely phased out for those with net incomes exceeding $108,090. The GIS program also provides a monthly basic benefit meant to provide additional support to those seniors aged 65 and over who have little-to-no income. For each dollar of gross income, the basic GIS benefit is reduced by 50 cents and so is completely phased out for those whose gross income exceeds $15,672. Benefits for both programs are indexed to inflation and are financed out of the federal government's general tax revenues. In combination with an additional income-tested benefit provided by the provinces, the first pillar has been very effective in securing the income floor and alleviating poverty among seniors.

The second pillar is comprised of the Canada and Quebec Pension Plans (CPP/QPP). Both programs are mandatory, whereby employees contribute a certain percentage of their earnings. Current contributions partially fund retiree benefits and partially accrue to an asset pool managed by a publically-mandated but independent investment board. For those who are employed by the public or private sector, half of the contribution is made by the employer, while those who are self-employed make the full contribution themselves. Pensions are then paid out on a defined benefit basis after an individual turns 65, are inflation-indexed over time, and are based on the level of contributions made during the worker's career.

The third and final pillar consists of all forms of voluntary and government-assisted savings. With respect to retirement income, the most important of such savings come in the form of employer-sponsored registered pension plans (RPP) – which may take the form of defined benefit plans (DB) or defined contribution plans (DC); registered retirement savings plans (RRSP) – which can be Group RRSPs or individual RRSPs; and more recently, tax-free savings accounts (TFSA). Deferred profit-sharing plans (DPSPs), whereby employers direct a share of profits into a trust on behalf of employees, are also included in the third pillar.

Assessing the performance of the retirement income system

Saving adequately for retirement is ultimately a personal responsibility. The decisions by individuals around spending and saving during their working years and on allocations within their investment portfolio determine what assets they have for retirement. That said, there is a definite role for public policy in ensuring the efficiency of and equity between individuals' available savings instruments, as well as in mitigating "market failures" that would inhibit the availability of certain beneficial savings vehicles (see textbox on "The role of public policy...").

As well, individuals' choices about when to retire also obviously shape the resources they have on-hand for retire-

ment. In this paper, we take the currently accepted retirement age of 65 as given and assess the adequacy of current and projected retirement incomes on that basis. However, a meaningful discussion can, and should, be held about the appropriate retirement age – particularly given increased longevity. This is an area for further research and consideration for policy-makers.

Lastly, individuals may not autonomously save during their working life in a manner that achieves what they would desire for income in retirement. As behavioural economics literature has highlighted, absent of some commitment (like pension contributions in the case of retirement savings), individuals often experience difficulty making decisions in the moment with long-term objectives in mind.

There are two widely accepted goals of retirement income systems among developed countries. The first objective is alleviating poverty among seniors. This goal has been effectively met by the current system. This is evidenced by the fact that Canada has the 4th lowest poverty rate among all OECD member countries and, at 4.4%, is less than one-third of the OECD average[2].

The second benchmark is the more abstract goal of ensuring that seniors have the ability to generate what is referred to as an "adequate" replacement income. In other words, individuals should be able to accumulate sufficient assets during their working careers to replace enough of their pre-retirement earnings in retirement so as to maintain their standard of living. An individual's "standard of living" is tied to their level of consumption. A proper benchmark for "adequacy" then should capture whether individuals have after-tax income during retirement that provides for sustainable post-retirement consumption comparable to that in pre-retirement, adjusting for expenditure items that no longer apply (such as work-related expenses or spending on dependents).

Unfortunately, given the variety of individual circumstances, there is no universally agreed upon benchmark for what is considered "adequate". Some financial planning experts advocate an extremely high percentage annual replacement of pre-retirement income, while others argue that 50% is all that is needed. The most common policy recommendation is 60% to 70% of pre-retirement earnings.

The role of public policy in promoting adequate saving

Preparing for retirement definitely involves a necessary degree of personal choice and responsibility. Individuals make choices about taking a job based on the total compensation, which includes pension benefits offered by potential employers. As well, throughout their working life, individuals choose how much to spend and save out of their present after-tax income, including in what assets to invest. To some degree, the "adequacy" of retirement income is arguably a matter of individual choice.

However, despite retirement preparation having individual dimensions, there is a relevant role for public policy in promoting – and, for some, ensuring – adequacy of income in retirement: Firstly, Canadians have concluded that poverty among seniors is unacceptable and politically endorsed policies that provide a minimum standard of living for seniors, ensuring dignity in old-age regardless of employment history. Secondly, public policy also can possibly improve the efficiency with which individuals can prepare for retirement by helping individuals pool risks and minimize transactions costs. Higher costs for acquiring assets and adjusting portfolios can inhibit individuals from saving optimally. Lastly, the tax system and legislative framework powerfully shape individuals' incentives to earn and save. If individuals cannot "smooth" their income tax burden, they have a less incentive to earn and save present income for the future.

However, we must note that public policy interventions come with trade-offs: The cost of funding old-age transfers falls on current taxpayers. Indeed, as the number of transfer-receiving retirees increases relative to working-age individuals, an individual working-age taxpayer faces a heightened burden. As well, while mandatory public pensions may improve aggregate well-being, compulsory savings do inhibit individuals' autonomy around their own savings.

Following from these, we propose six main public policy goals against which we can measure the adequacy of Canada's present retirement income framework:

- To ensure a minimum standard of income for retirees to live with dignity and participate in Canadian society.
- To facilitate continuity of living standards across lifetime income, providing instruments for "smoothing" income and tax liabilities.
- To mitigate possible failures of the market to provide adequate instruments for risk-pooling and enhance the efficiency with which individuals can save.
- To ensure labour market flexibility, providing portability of pension savings across jobs and geographies and minimizing potential distortions to labour force participation.
- To minimize the fiscal cost to present taxpayers of financing retirement income for present retirees.
- To preserve individual autonomy in planning for their own retirement in accordance with individual preferences, employment circumstances and risk tolerance.

The appropriate benchmark may not apply equally across the income distribution. It can be argued that, while higher income individuals generally have lower-than-average replacement rates, their absolute level of retirement income remains sufficient such that they do not suffer a large impairment in living standards in retirement. In contrast, for lower- and middle-income individuals, policy-makers will likely assess that a higher replacement rate is desirable. To a degree, the targeted replacement rate is somewhat a subjective decision and a matter of individual choice around how much income is deemed "adequate" in retirement. This depends on an individual's preferred consumption profile across their lifetime. If extensive retirement travel is in the picture, then larger savings are required. It may also be a personal decision to consume more during the working career and be more frugal in retirement. In other words, having a 'lower' standard of living in retirement does not necessarily mean having a 'poor' standard of living.

Doing analytical work on this subject is further complicated by the fact that some researchers use pre-retirement consumption as the replacement target rather than pre-retirement income. The limitation of using income is that it is used for a multitude of purposes, such as: paying off debt, saving, or financing post-secondary education of children. Many of these expenditures may no longer be necessary in retirement. Ultimately, a better understanding of life-cycle savings behaviour is necessary to appropriately use a consumption standard as the basis for assessing retirement income adequacy. A consumption replacement rate may also distort the picture of retirement income security: Of two households of identical pre-retirement income, a higher consuming household has more consumption to replace in retirement (and their lower saving rate makes it less likely that they would be successful).

For the purpose of this paper, we will use the most popular benchmark of aiming to replace 60% to 70% of pre-retirement net income. While admittedly a simplified approach, income statistics are more often used in studies and are more frequently available at a disaggregated level. However, the use of 60% to 70% income replacement may overstate the challenges in Canada if a lower ratio was deemed adequate. The implication is that more research needs to be conducted on what the optimal benchmark should be, but for the time being we will use the traditional metric.

Is there a problem now and why?

Recent studies have attempted to answer four interrelated questions: First, what share of present retirees are falling short of adequate replacement rates? Second, how does replacement differ across the income distribution? Third, how do the income sources differ between present retirees with adequate replacement and those falling short? Fourth, does coverage by an employer pension have a material impact on whether present retirees achieve adequate replacement?

The general conclusion of the studies is that the majority of current seniors are able to achieve an adequate replacement rate, but there is a significant minority of retirees who do not. LaRochelle-Côté et al. (2008) at Statistics Canada estimate that 20-25% of current retirees have a replacement rate of less than 60% of pre-retirement after-tax income[3]. We report their results in Table 1. This is further supported by a research report prepared for the Department of Finance by Keith Horner, which concludes that, based on RPP/RRSP saving data from tax files, 22% of individuals aged 30 to 64 are likely to experience a significant drop in living standards

TABLE 1: RETIREMENT INCOME BREAKDOWN BY AGE OF RETIREE* AND REPLACEMENT RATE

	Age 65		Age 70		Age 75	
Replacement Rate	<60%	>100%	<60%	>100%	<60%	>100%
Share of retirees (%)	18.1%	28.6%	24.3%	15.5%	24.7%	17.2%
Average Pre-Retirement Income (age 55)	$38,900	$38,600	--	--	--	--
Retirement Income Breakdown (% share of total retirement income)						
total income	$20,900	$64,800	$21,400	$63,600	$20,700	$62,300
earnings	8.6%	41.5%	1.4%	27.2%	0.5%	19.3%
private pensions	30.6%	19.1%	24.3%	30.8%	21.3%	37.4%
investment gains	7.7%	9.3%	4.7%	11.9%	3.9%	13.3%
capital gains	0.5%	15.9%	0.5%	7.9%	0.5%	6.4%
OAS/GIS	16.7%	3.9%	32.7%	9.1%	35.3%	10.3%
C/QPP	32.1%	8.5%	35.0%	12.6%	36.7%	13.2%
Other	4.3%	1.7%	1.4%	0.5%	1.4%	0.3%

*For those in the middle income quintile; Source: Statistics Canada (LaRochelle-Coté et al., 2008)

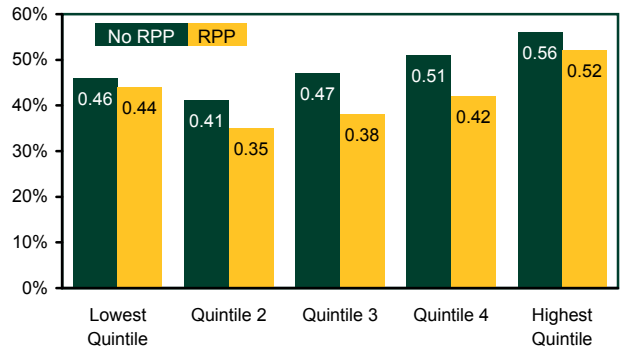
(assessed on achieving a 90% consumption replacement rate)[4]. Horner (2009) assesses that this under-replacement will be concentrated among middle income earners ($25,000 to $100,000) of whom 28% appear at risk.

The implication is that there is no crisis today, but it is not immediately evident why some seniors are falling short. Examining replacement rates across income distribution, LaRochelle-Côté et al. (2008) shed some tentative light on reasons behind the current shortfall, but their answer is inconclusive. They identify that the retirees who are not able to meet an adequate replacement rate come from across the entire income spectrum. While upper-income individuals (families with an annual income greater than $80,000) have largest shares below 60% replacement, this is not generally viewed as worrying from a public policy perspective because the absolute level of income in retirement provides for an adequate living standard. Meanwhile, those on the low-end of the income spectrum (families with an income of roughly less than $28,000 per annum) are generally able to generate a 60% replacement income through the first two pillars of the retirement income system, OAS/GIS, and CPP/QPP. This again highlights the limitations of the traditional income replacement benchmark, since 60% of less than $28,000 is a very low absolute level of income.

The authors focus specifically on those within the middle-income category (families with income between $28,000 and $80,000), because there is a significant share that fail to meet the desired income replacement and the lower absolute income in retirement can lead to a materially lower standard of living. The authors disaggregate retirees by income quintile and then assess their income replacement rates, also breaking down their incomes by source.

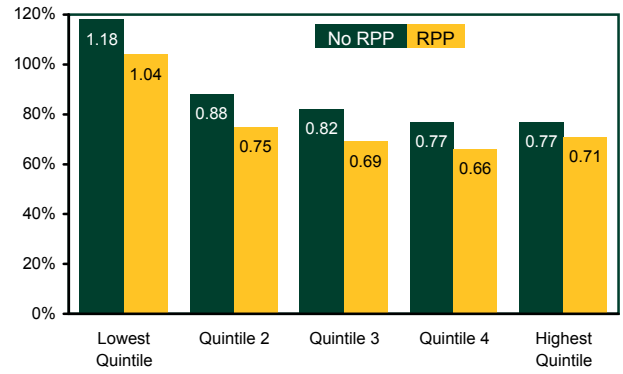
Comparing the sources of income among those with similar earnings during their working careers, but who have very different retirement outcomes, it is evident that those with higher retirement incomes depend significantly less on OAS/GIS and CPP/QPP and more on private income sources, such as: earnings, private pensions, investment gains, and capital gains. In other words, the individuals replacing more of their income are doing so through voluntary savings mechanisms. As these retirees age, those with high replacement rates continually depend on these private income sources more so than on CPP/QPP and OAS/GIS, whereas those two components comprise more than 70% of the retirement income of those with low replacement rates. In addition, investment gains and capital gains are key income sources for those with high replacement rates. The above mentioned trends raise the question: Are those with low replacement rates not saving at all, or simply making poor investment choices? Research is called for on this issue.

FIGURE 1: MARKET INCOME* AS A SHARE OF PRE-RETIREMENT EARNINGS, BY RPP STATUS



*For men aged 70-72, includes earnings, interest/dividends, pensions/superannuations/RRSPs, and other market sources;
Source: Statistics Canada (Ostrovsky & Schellenberg, 2009)

FIGURE 2: TOTAL INCOME* AS A SHARE OF PRE-RETIREMENT EARNINGS, BY RPP STATUS



*For men aged 70-72, includes market income, capital gains/losses, and transfer income
Source: Statistics Canada (Ostrovsky & Schellenberg, 2009)

It is not immediately evident why individuals who have similar pre-retirement income can have such wildly divergent outcomes in retirement. Jack Mintz conjectures as to possible explanations, including inadequate savings discipline, job losses, or late immigration to Canada. Unfortunately, the plausible assertions cannot be substantiated due to a lack of empirical evidence.

Much of the recent retirement income security debate involves whether employer pensions contribute meaningfully to retirement income security. One of the major drawbacks of research outlined above is that it does not distinguish between the outcomes for individuals who have employer-sponsored pension plans from those who do not. This is an important distinction that needs to be made, as the absence of a pension necessitates significantly greater savings dis-

cipline. In addition, LaRochelle-Côté et al. (2008) demonstrate that "private pensions" income, which includes both employer-sponsored pensions and RRSPs, is a prominent income source for all retirees.

Although we cannot be entirely sure how these individuals are generating their income and how important each source is, Pyper (2008)[5] uses data from the 2005 Survey of Financial Security to establish that only 60% of Canadian households hold an RRSP and that, for those who do, median holdings in RRSPs are just $25,000. Even for those households where the primary earner is aged 55-64 and on the cusp of retirement, only 65% have an RRSP and their median RRSP holdings are just $55,000.

This would imply that within "private pension" income, as per LaRochelle-Côté et al. (2008), employer-sponsored pensions play the greatest role. Microdata on household wealth seem to confirm this (see text-box "Have the 'Baby Boomers' put enough away?"), as average RRSP holdings for non-pension covered households are far less than the actuarial value of pensions for households with such benefits across income quintiles. Clearly more investigation is needed in delving even deeper into the subject of saving by income quintile to garner a better understanding of why some are saving less, but once again there are data limitations.

The role of pensions in providing income security is, however, tackled by Ostrovsky and Schellenberg (2009)[6], who utilize the same dataset used in LaRochelle-Côté et al. (2008). Replacement rates by income quintile and registered pension plan (RPP) coverage are used to investigate whether or not retirees who had an RPP during their working careers are better off than those who did not. The income quintiles are: Q1 ($10,000 to $31,799), Q2 ($31,800 to $45,749), Q3 ($45,750 to $58,199), Q4 ($58,200 to $76,099) and Q5 ($76,100 and over). For the reader's reference, the term RPP refers to defined benefit and defined contribution plans that are required by law to be registered with the Canada Revenue Agency and the term is used interchangeably with employer-sponsored pension plans and employer pension plans. Ostrovsky and Schellenberg (2009) reach a surprising and counterintuitive conclusion, exhibited in Figures 1 and 2, that retirees who are not covered by a RPP on average have higher income replacement rates across all income quintiles. This report has received considerable attention and has been used by some commentators to argue against broad pension reforms.

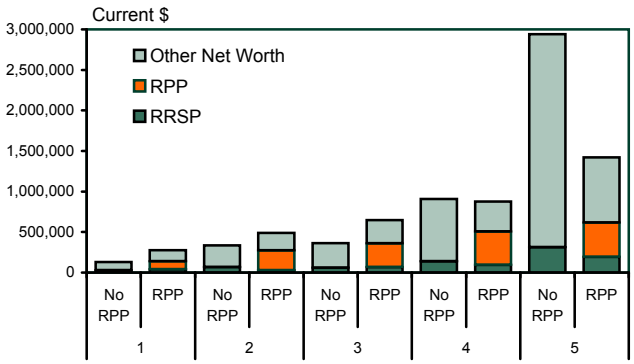
However, the devil is in the details. Between RPP members and non-RPP members, the former are obviously able to generate more income from pensions and superannuations than the latter. However, non-RPP members are able to compensate through more income generated by interest income, dividends, and capital gains. In addition, non-RPP members are significantly more likely to work during their retirement years. If post-retirement age earnings are stripped out, the replacement rates are broadly comparable across all income quintiles.

Therefore, at first pass, it appears as though many without an employer pension are able to achieve an adequate replacement rate.

Have the "Baby Boomers" put enough away?

Microdata from the Survey of Financial Security provides a useful snapshot of net worth by income quintile. While present retirees appear to have adequate incomes, a key question is whether Baby-Boomers who are shortly to become senior citizens hold adequate savings. Moreover, as they approach retirement, are Baby-Boomers without pensions as well-resourced as those with coverage? For the lower three income quintiles of the cohort aged 55-65 in 2005, the survey microdata exhibits large differences in net worth between those with pension coverage (defined as having positive RPP assets) and those without. Noticeably, in any income quintile, the average RRSP holdings of non-RPP households do not equal the RPP holdings of RPP-covered households. However, for the upper two income quintiles, households not covered by an RPP save through other assets (particularly in the case of uncovered upper quintile households) in a manner that offsets their lack of RRSP saving.

FIGURE 4: NET WORTH FOR AGE 55-65 IN 2005 BY INCOME QUINTILE AND PENSION COVERAGE



Source: Statistics Canada (Suvery of Financial Security, 2005)
Note: Pension value calculated on "Going Concern" basis

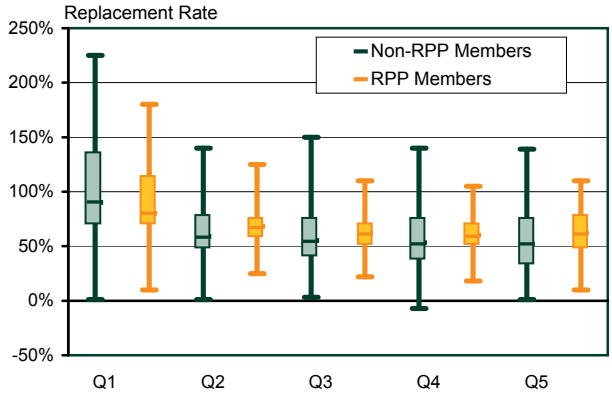
An important caveat to these results, however, is that the averages are highly skewed by a wide distribution of outcomes. In revisions to their original paper, Ostrovsky and Shellenberg address these issues. The accompanying candlestick chart (Figure 3), which shows the range of replacement rates for each income quintile broken down by RPP coverage, provides a very detailed but somewhat complicated explanation for the outcomes being observed. First, the lines on either end of each candlestick indicate the full range of replacement rates that those in any particular group were able to achieve. Next, the shaded box indicates the distance between those in the 25th percentile and the 75th percentile; in other words, the middle 50% achieved replacement rates fall within the confines of the box. Lastly, the line inside the box represents the median; so half of that group would fall above that replacement rate, and the other half would fall below. As an example, for non-RPP members in the 2nd highest income quintile (Q4), the individual with the highest replacement rate is able to generate about 145% of his/her pre-retirement earnings. The middle 50% of individuals in this grouping fall between replacement rates of about 45%-90%, and the median replacement rate is about 55%.

According to Figure 3, for all income quintiles, except for the lowest (Q1), the median income replacement is lower for non-RPP members than for RPP members. In these recent revisions to their original paper, Shellenberg and Ostrovsky note that median earnings replacement by retired, male non-RPP retirees from the middle quintiles (Q2 to Q4) are 7 to 9 percentage points lower than those achieved by male RPP retirees. Reconciling this with the fact that the opposite is true for the averages implies that there are a relatively small number of individuals in the non-RPP category with very high replacement rates that are driving up the average outcomes above that of RPP members. Due to the narrower dispersion of replacement rates for RPP members, even those who fall below the median replacement rate achieve income replacement relatively close to their median. In contrast, for those without RPPs, outcomes have a much larger dispersion below the median.

Hence, we can reasonably infer that pension coverage has a significant impact on the income security of retirees, but this does not preclude those who lack pensions from achieving a high replacement rate if they purse a highly disciplined saving strategy through the available mix of financial asset vehicles. The problem is that many do not do so.

Moreover, we note that individuals without DB pension coverage are directly exposed to risks from the uncertain

FIGURE 3: REPLACEMENT RATES BY EARNINGS QUINTILES AND PENSION COVERAGE



*Excludes outside values; Source: Statistics Canada

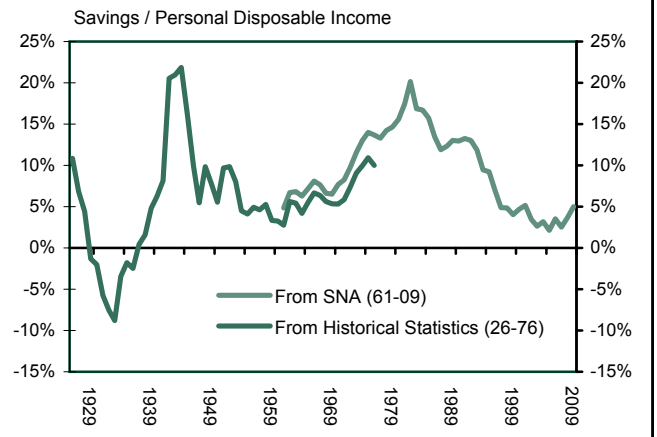
returns on their financial portfolios. In order to take into account the risk that market corrections could lead to unexpectedly lower personal wealth when approaching or in retirement, an individual without DB pension coverage must achieve a greater level of savings than a comparable individual in a DB plan.

So what are the key conclusions? It appears that the current retirement income system has been achieving its first goal: keeping the current pool of retirees out of poverty. It has also been relatively successful in achieving the second goal: the available mix of savings vehicles has provided the vast majority of retirees with the opportunity to accumulate sufficient assets for retirement. However, there is a significant minority of retirees, across all income groups, but with significant concentration in the middle-income range, who have not been able to achieve an adequate replacement rate. From the existent data, the reason is not clear and requires further research. However, it does appear that those without an employer pension are at greater risk of experiencing a decline in their standard of living in retirement.

Will there be a problem in the future?

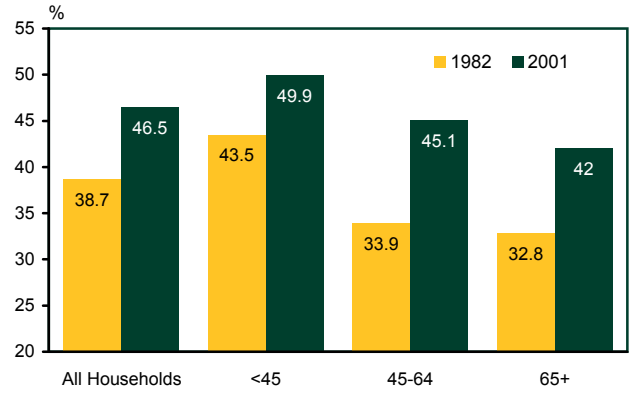
A bigger question is how the retirement income security system will fare in the future. Many of the recent trends do suggest a larger at-risk population of seniors in the future. Consider how the lifecycle pattern of consumption has been changing. Canadians are staying in school longer, having children later, retiring earlier and living longer. The cost of post secondary education (PSE) has been rising rapidly, and parents can no longer finance a child's education out of pocket. PSE is now a major source of expenditure and/or debt when parents are age 50+, delaying retirement saving until late in life. At the same time, Canadians have become

FIGURE 5: PERSONAL SAVINGS RATE (1926-2009)



Source: Statistics Canada (SNA & Hist. Statistics of Canada)

FIGURE 6: SHARE OF CANADIAN HOUSEHOLDS THAT SPEND MORE THAN TOTAL INCOME*



*Pre-tax income
Source: Statistics Canada (Chawla and Wannell, 2005)

more reliant on debt to finance consumption. This means that households are having increasing difficulty smoothing their consumption over their lifetime because it is much more difficult to save until very late in life. Figure 6 provides the results of a 2005 Statistics Canada study, showing that 38.7% of households in 1982 spent more than their total household after-tax income. This share rose to 46.5% in 2001 and likely continued to climb over the last nine years. In other words, probably close to half of Canadian households spend more than they earn. The most shocking observation is that this holds true for all age cohorts, including those age 45-64 that are supposed to be in their peak saving years.

Inadequate saving

In recent decades, there has been a secular decline in the personal savings rate, reflecting the changing consumption lifecycle outlined above. Back in 1980, Canadians were saving, on average, up to 20% of their net current income; but, this share has consistently fallen over time and averaged just 3.6% this decade. The decline in the personal savings rate does suggest a greater 'at-risk' population of future retirees, as income security in retirement relies on savings from personal income and asset appreciation during the decades prior to retirement.

The fact that current retirees are broadly able to achieve adequate replacement rates is predicated on the higher saving behaviour in the 1960s, 1970s and 1980s, as well as the financial returns over these decades and more recently. The future condition of retirees will be increasingly affected by the low personal saving rates that have existed in the 1990s and 2000s, as well as slower future asset returns. In the wake of the recent recession, there has been an increase in the personal savings rate from a low of 1.5% in early 2005 to 4.6% in 2009. However, TD Economics does not anticipate a material secular rise in saving from current income in the coming decades. Indeed, unless the consumption and debt habits of individuals change radically, our long-term forecast is for the personal savings rate to average a low 5.5%.

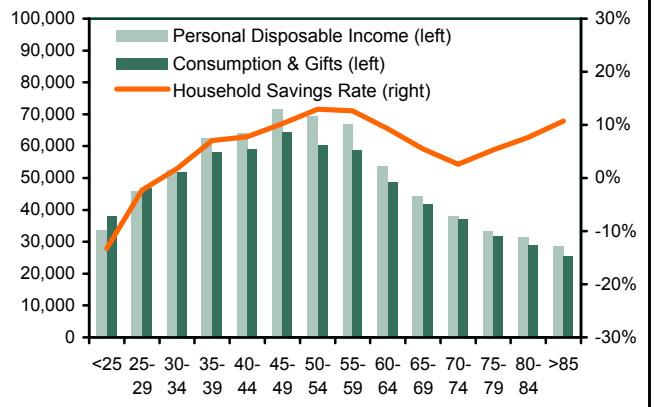
Some are very critical of the aggregate personal savings rate measure. It should be noted that personal saving on a national accounts basis follows an internationally accepted convention used by national accountants in all major economies. However, national accountants and many economists have debated this convention for years.

One criticism is that the personal savings rate may be affected by the prevailing inflation rate, meaning that some of the decline observed over time is simply the product of going from a high inflation rate in the 1970s and 1980s to a low inflation rate in the 1990s and 2000s. Certainly early 1980s savings rates were affected by macroeconomic conditions and uncertainties surrounding nominal interest rates in those highly inflationary times.[7] Nonetheless, the recent low savings rates imply more limited inflows to personal savings vehicles.

Another key limitation of the personal savings rate is that Canada's aging population means that there should be a structural decline over time, due to a rising share of the population representing retirees who no longer need to save and are drawing down assets to fund current consumption.

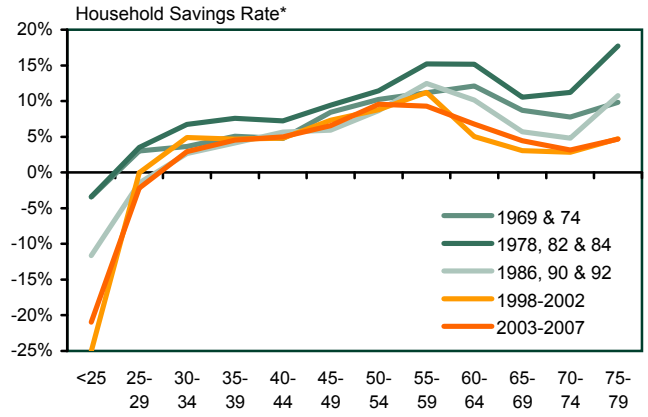
However, microdata drawn from household surveys allows a comparison of savings rates by age groups across different periods over multiple survey years. Figure 7 illustrates the components of the savings rate in 2007. As shown in Figure 8, across almost all age groups, the savings rates in earlier periods are noticeably higher than the more recent periods. From Figure 8, one can observe a shift away

FIGURE 7: CONSUMPTION AND INCOME BY AGE GROUP IN 2007



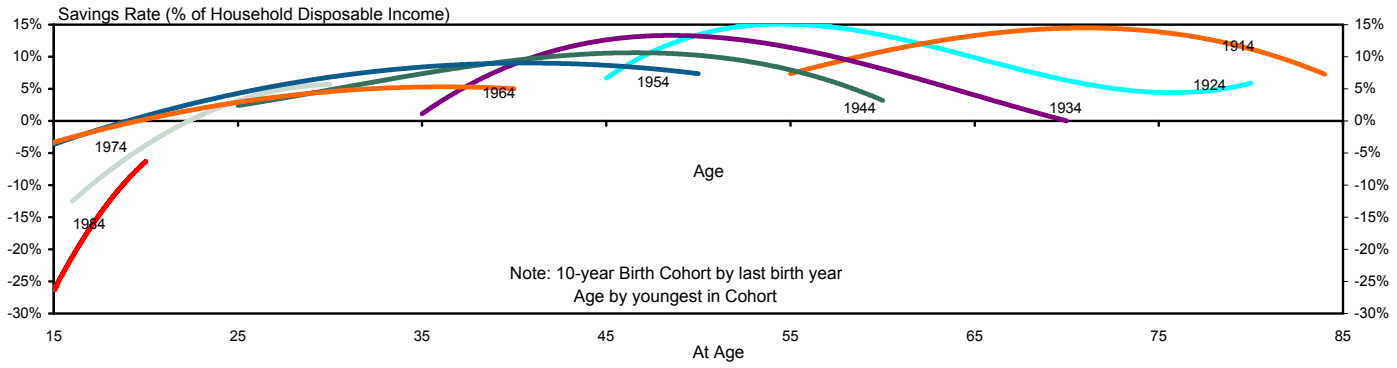
Source: Statistics Canada (Survey of Household Spending 2007)

FIGURE 8: SAVINGS RATES BY AGE GROUPS



Source: TD Economics, Statistics Canada (SHS & FamEx [given years])
* Savings = Household Disposable Income - Consumption & Gifts

FIGURE 9: HOUSEHOLD SAVING RATE BY BIRTH COHORT*



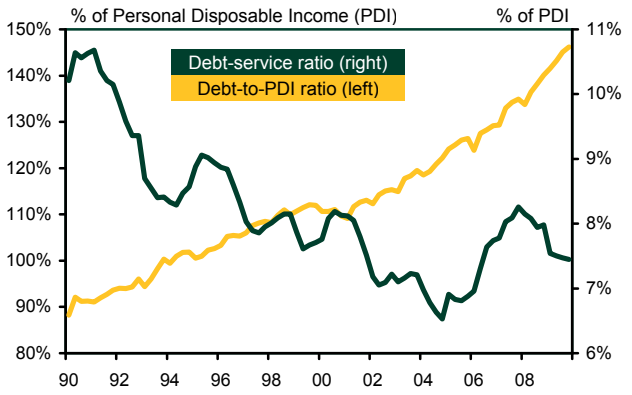
Source: TD Economics, Statistics Canada (FamEx and SHS, various years)
* Smoothed using polynominal trend

from saving in almost every age group from the late 1970s to the present day. Younger households are dissaving to a much greater degree than predecessor cohorts were when at the equivalent age. As well, near-retirement households in the most recent periods (1998-2002 and 2003-2007) were saving at much lower rates than were similarly aged households in earlier periods. The bottom line is that the decline in the aggregate savings rate is not simply a consequence of a demographic shift. Rather, on average, almost every age group of households has saved less from their current disposable income than their predecessors.

Alternatively, rather than examining savings rates of age-groups at different times, we can use the microdata to follow birth cohorts through time, examining the savings rates of each cohort at equivalent ages to their predecessor cohorts. Figure 9 shows household savings rates by birth cohort, exhibiting the general decline of each cohort's savings rate at a given age relative to earlier-born cohort. For instance, those born from 1924 to 1934 saved markedly more when 50 years old than those born from 1934 to 1944 or those born from 1944 to 1954. Similarly, those born from 1974 to 1984 have dis-saved at a much greater rate than the baby boomers or even the cohort born from 1964 to 1974.

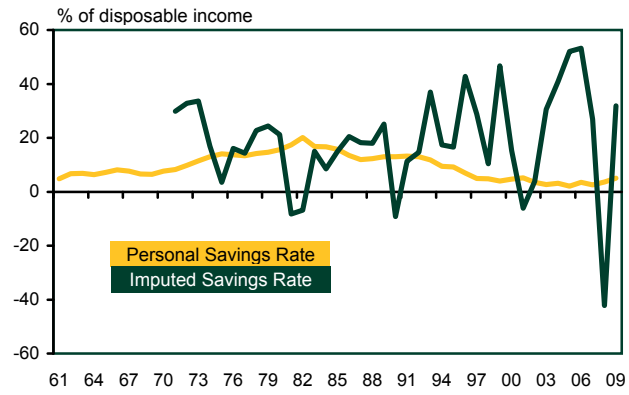
Obviously there will be reasons related to the timing of business cycles that will impact the relative savings rates of different cohorts at equivalent ages. As well, for younger ages, the length and cost of education has increased, compelling greater dis-saving among the current young than for their parents or grandparents. In addition, the level of incomes matters to the savings rate: young individuals can dis-save more and repay debts by saving proportionately less if their incomes during working-age are higher than those of their predecessor cohorts. However, in the absence of greater capital gains, lower saving rates during working life imply lower income replacement during retirement. For this reason, this evident transition of each successive cohort to

FIGURE 10: DEBT-SERVICE RATIO AND DEBT BURDEN OF CANADIAN HOUSEHOLDS



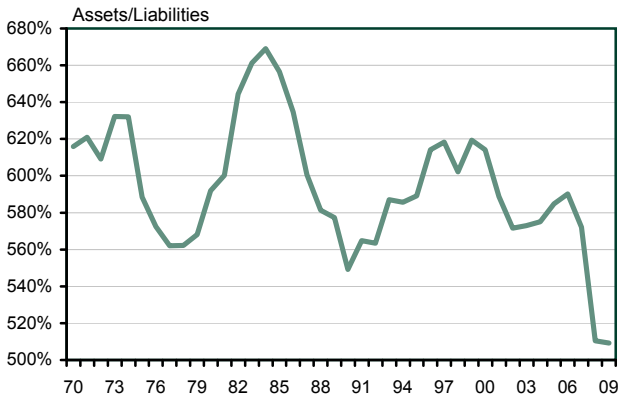
Source: Statistics Canada

FIGURE 11: SAVINGS RATES IN CANADA



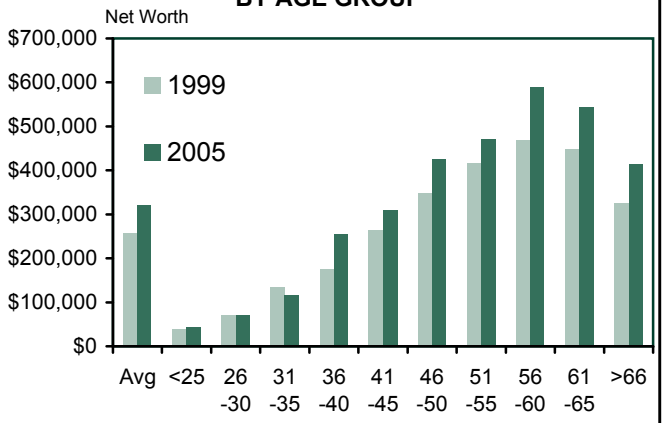
Source: Statistics Canada

FIGURE 12: ASSETS-TO-LIABILITIES RATIO OF CANADIAN HOUSEHOLDS



Source: Statistics Canada

FIGURE 13: HOUSEHOLD NET WORTH BY AGE GROUP



Source: Statistics Canada, Bank of Canada

lower savings rates across the lifecycle is of concern.

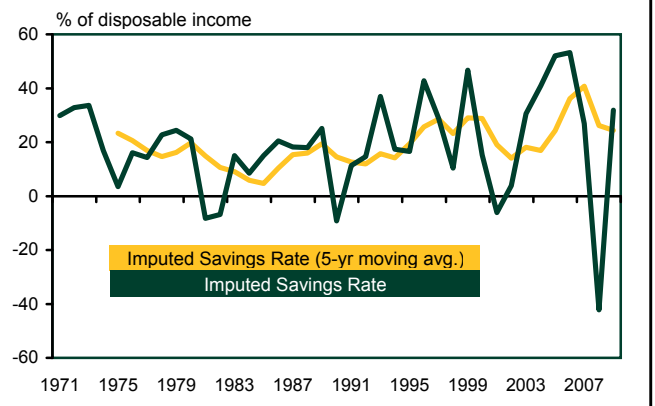
Canadians relying too much on capital gains

A second limitation of the personal savings rate is that it is a simple calculation that takes the difference between current income and outlays and so does not include both realized and unrealized capital gains (i.e. increases in real estate prices and the value of equities) that can be an important source of asset accumulation. Over the past two decades, both inflation and interest rates have become low and stable and this has caused the savings behaviour of Canadians to change dramatically. Many individuals are now reliant upon capital gains and real estate appreciation as a major source of saving instead of putting aside funds out of monthly earnings. And, because the cost of borrowing has fallen consistently for three decades, Canadians have taken on a significantly higher level of debt to finance current consumption and have depended upon growth in their assets to outstrip the growth of their debt, thereby enabling them to still "save". This has been made affordable by the trend decline in interest rates over the past three decades. These declining interest rates allowed the debt-service ratio (interest on outstanding debt relative to personal disposable iincome) to fall, despite larger amounts of debt. Notably, reported Statistics Canada debt service ratio does does not include principal payments.

In order to reflect saving through asset appreciation, one can calculate an imputed savings rate from the personal sector component of the National Balance Sheet Accounts. This imputed savings rate, exhibited in Figure 14, has maintained a long-term average of about 20% over the past several decades.

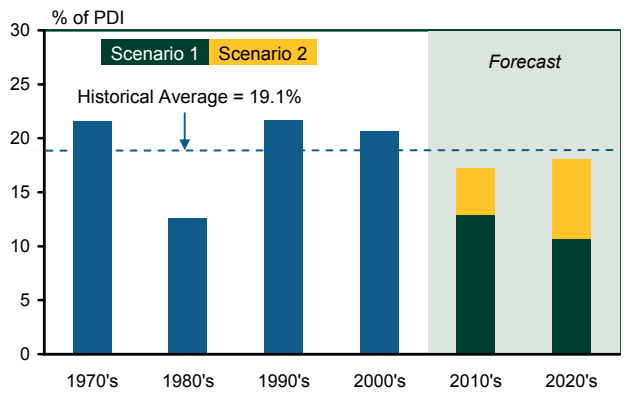
However, the changing saving attitudes of Canadians

FIGURE 14: IMPUTED SAVINGS RATE IN CANADA



Source: Statistics Canada

FIGURE 15: ALTERNATE SAVINGS RATE FROM NATIONAL BALANCE SHEET ACCOUNTS



Source: Statistics Canada, TD Economics

presents a number of issues for the future of retirement income security. First, individuals have become more reliant upon asset prices, and there has been increasing volatility in prices over time. Although the long-run average imputed savings rate has held relatively steady throughout the past four decades, it has fluctuated wildly in recent years. Between 2000 and 2009 when there were two major stock market corrections, the imputed savings rate averaged 20.6%, but fluctuated from +53.2% in 2006 all the way down to -42.2% in 2008. Most troubling is the fact that asset returns have been abnormally high in certain periods, such as 2002 to 2007. Particularly in real estate, asset returns have been markedly above historical averages and this implies that future appreciation will likely be lower in order to normalize the long-term trend growth in the value of these assets. Between 2002 and 2007, real estate assets were growing at 10.4% annually, well in excess of incomes and far greater than the 4.6% recorded between 1990 and 1999. In addition, as a share of total assets, real estate rose from 30% in 1999 to 40% by 2008.

This atypical level of asset growth occurred at the same time that declining borrowing costs fuelled liability growth that was also above historical trends. In particular, consumer credit, which consists of credit card debt, unsecured lines of credit and secured lines of credit (such as home equity loans) grew at a rapid 10% annually between 2000 and 2009 compared to the 5.5% annual growth recorded in the 1990's. However, the increased dependence on asset returns to build savings rather than saving out of net income, combined with an increased dependence on debt to fuel current consumption, leaves households significantly more vulnerable to asset price movements and interest rate swings. As shown in Figure 12, the assets-to-liabilities ratio, an indication of the indebtedness and vulnerability of households, is at its lowest level on record as of 2009 at 510% (or $5 in assets for every $1 of debt). Across all age cohorts, households are more leveraged and younger cohorts, in particular, are carrying more debt than their predecessors. However, there has also been a notable deterioration in the balance sheets of near-retirement individuals, who in 2005 were holding fewer assets for each dollar of liabilities than similarly-aged individuals in 1999.

Weaker price growth to be a headwind for asset accumulation

The implication of a low personal savings rate but a solid imputed savings rate is that Canadians are relying more on asset appreciation to provide for wealth accumulation. Unfortunately, the outlook is for weaker capital appreciation rates in the coming decades. The biggest single item on the personal balance sheet is real estate. Historically, real estate delivers a return that is 1 to 2 percentage points above the rate of inflation – roughly in-line with average annual real income growth. However, real estate has delivered a real return of 8 percentage points over the past decade. Particularly given the erosion of housing affordability, a reversion to the mean will eventually occur, suggesting that real estate is likely to deliver a relatively flat return over the next decade and only slightly above inflation return thereafter.

Moreover, the aging population combined with modest productivity growth suggests a slower long-term sustainable pace of economic growth. Whereas one used to think of the Canadian economy averaging 3% growth, the long-term outlook is for real GDP growth of 1.5% to 2%. This implies income (nominal GDP) growth of 3.5% to 4%, well below the long-term historical average of over 5% over

the 1993 to 2008 period. The prospect of slower income growth suggests weaker financial asset returns and low interest rates, on average, over the long-term. Based on past analytical work and recent financial markets developments, TD Economics expects financial portfolios to deliver an annual return roughly in the 4% to 7% range, depending upon the asset mix.

In the accompanying chart (Figure 15), two scenarios for the imputed savings rate are presented. Scenario 1 details how the level of savings will evolve should households continue with their current pattern of debt-driven consumption and limited saving out of net income. In other words, this scenario will be the more likely of the two if both the personal savings rate and the level of liability growth continue to hold at the levels they have averaged this decade – 3.6% and 8.4%, respectively. This implies that if Canadians do not change their savings behaviour, the slower rate of asset appreciation in the coming years could cause the imputed savings rate to fall by as much as 10 percentage points from its historical average by 2030. In scenario 2, the savings rate is assumed to rise above its current level to 5 to 6% in the long-term, while liability growth is assumed to slow to 6.5% due to consumers responding to the slower rate of asset appreciation. Even with these more conservative assumptions, the imputed savings rate in this scenario still falls by 2 to 5 percentage points within two decades. As a consequence, in both scenarios, the increased debt load pushes the assets-to-liabilities ratio continuously lower, falling to 400% in scenario 2 and to 300% in scenario 1.

Micro-simulation of cohorts of retirees

The bottom line is that the outlook for the personal savings rate and the imputed savings rate suggest that there is greater risk of more seniors failing to meet the desired income replacement in retirement. However, these economy-wide statistics cannot tell the full story. One needs to understand the risks at a more disaggregated level. Within age cohorts and income brackets, households differ in many respects. Questions about retirement preparedness are distributional in character: within any income quintile there are certain households who appear to be saving adequately and others who are not. Moreover, answering these questions requires a finely disaggregated view of different households' characteristics and projected retirement income sources.

Such forward-looking, distributional questions about whether present behaviour will compromise future retirement income security can be investigated through microsimulation approaches. Microsimulation involves computational models in which the characteristics of a modeled group of individuals and households are simulated into the future. In such approaches, the characteristics of the hypothetical individuals and households are tracked during the lifetimes of its members. By allowing researchers to project and examine the population at points in the future, microsimulation can provide nuanced insights into the future consequences of present circumstances. Of course, as in any model, the quality of the simulation is only as good as the quality of the data and robustness of the equations that inform its dynamics. Here, we stress that "microsimulation" is distinct from "forecasting". These microsimulation models do not predict the future. Rather the models simulate scenarios, involving the characteristics of population at different points in its individuals' lifespans, based on input assumptions about attributes, behaviour and the economic environment.

Life's Path to Retirement

In order to contribute new insights to the evolving debate around possible reforms to Canada's retirement income system, we have undertaken modeling using the LifePaths Microsimulation Model developed by Statistics Canada. LifePaths models the most important components of retirement income at the level of individuals and families, including income received from public pensions, from employer pensions and from RRSPs. In most recent development, the modelling of home ownership and home equity, including home mortgages, have been added to the model. Other types of assets and liabilities, such as saving outside of RPPs and RRSPs and non-mortgage debt, are either currently modelled in a fairly rudimentary way or are completely missing from LifePaths. These shortcomings reflect both ongoing resource constraints and the limitations of available data. Most notably, the lack of a frequent and ongoing wealth survey hinders a rigorous and all-encompassing modelling of net worth.

Nevertheless, LifePaths, in its current state of development, can contribute many valuable insights – especially insights that are not available from other sources – to the evolving debate around retirement income security and pension reform. In presenting these results, our goal is not to provide definitive resolution on these matters. Rather, by exhibiting current model results, it is hoped that we can highlight an important avenue for further research. Indeed, our use of LifePaths has convinced us that further developing this tool would be useful – if not essential – in informing such ongoing policy discussions. Specifically, further exploration into future retirement income security would feature a broader range of replacement benchmarks and

dynamics – in particular, assumptions about asset returns. There is also scope for more deeply examining the "at-risk" population, identifying those attributes (family status, timing of immigration, employment history, etc.) that contribute to under-saving.

We are admittedly novice users of LifePaths, which has been used almost exclusively in-house by Statistics Canada to perform simulations on behalf of federal government departments and other clients. While these results and any errors are entirely ours alone, we have gratefully benefited from the assistance of Statistics Canada staff in adapting LifePaths to generate the results presented here.[8]

Our objective is to understand the determinants behind why certain households fall short of a given income replacement threshold and how this will evolve over time. For this purpose, the population is divided into birth cohorts (age groups based on the decade in which a person is born) and income quintiles (dividing up the range of income into five categories from lowest income to highest income ranges). For simplicity, the "pre-retirement" period is deemed to be from 40-to-65 years old. For comparability, we deflate all income variables to 2010 dollars.

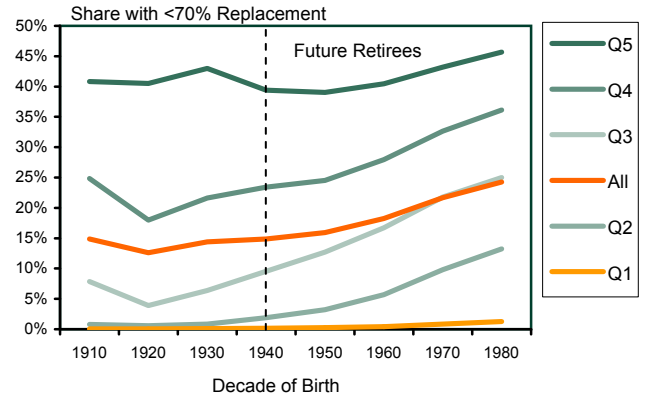
The income quintiles are based on the average net income during the pre-retirement period. Since after-inflation incomes have grown over time, it is important to distinguish between cohorts and define income quintiles specific to each. For instance, in inflation-adjusted constant 2010 dollars, the second income quintile extends from $11,000 to $23,000 for the 1940s-born cohort, while for the 1980s-born cohort, the second income quintile extends from $20,000 to $38,000.

What will happen to retirement income security and why?

According to the LifePaths model, the outlook over the coming decades is a gradual increase of the share of retirees with less than 70% income replacement. Overall, the share of retirees failing to meet the 'desired' savings rises from 15% for those born in the 1940s to just over 24% for those born in the 1980s. While not dramatic in aggregate, the deterioration masks a critical underlying detail: the share of the upper income quintile that falls below 70% replacement remains relatively constant but the share of middle income quintiles under 70% replacement deteriorates worryingly.

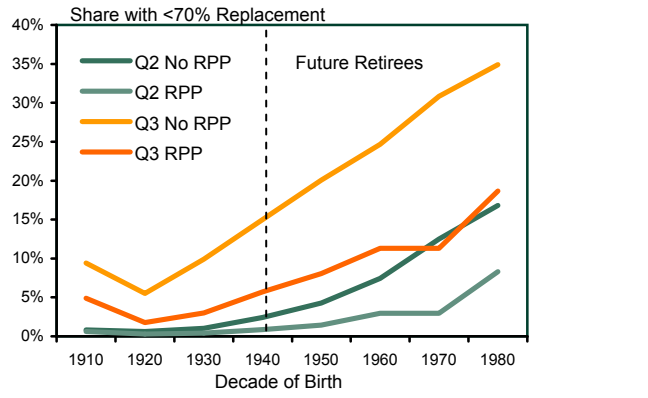
Indeed, the percentage of those falling short of the desired income replacement is most marked for those with pre-retirement net income in the second income quintile, but it is also substantial for those in the third and fourth income quintiles. Most pointedly, the results indicate that, while only around 2% of the second income quintile of the 1940s

FIGURE 17: INCOME REPLACEMENT BY BIRTH COHORT



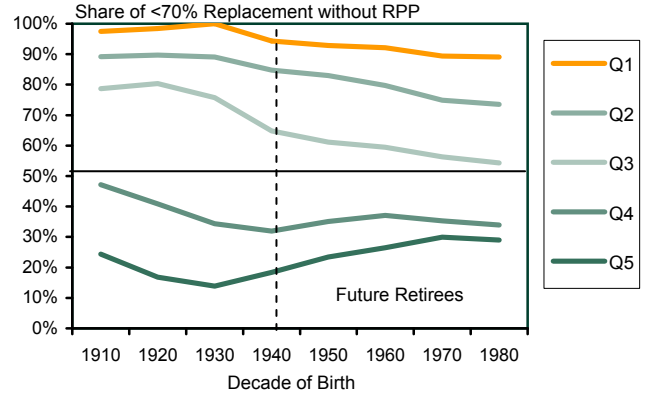
Source: TD Economics, Statistics Canada (LifePaths simulations)
Note: Housing treated as 100% Equity Annuitization

FIGURE 18: INCOME REPLACEMENT BY BIRTH COHORT AND RPP COVERAGE



Source: TD Economics, Statistics Canada (LifePaths simulations)
Note: Housing treated as 100% Equity Annuitization

FIGURE 19: INCOME REPLACEMENT BY BIRTH COHORT AND RPP COVERAGE



Source: TD Economics, Statistics Canada (LifePaths simulations)
Note: Housing treated as 100% Equity Annuitization

("baby boom") birth cohort will fall below 70% replacement, approximately 13% of the second income quintile of the 1980s birth cohort will fail to achieve 70% replacement.

Importantly, the LifePaths results provide a strong indication that coverage by an employer pension matters greatly. For those with pre-retirement income in the second and third income quintiles, there is a marked difference in replacement rates in retirement depending on whether the individual has RPP coverage. A much greater share of households without RPP coverage fail to achieve 70% replacement than those who do. Indeed, the modeling results predict that this differential will widen for more recent born cohorts.

More explicitly, for the third income quintile of the 1940s-born cohort, only 6% of RPP-covered individuals will fall below 70% replacement, while 15% of non-RPP individuals in the cohort will lack 70% replacement. Based on the simulation, for the third income quintile of the 1980s-born cohort, 19% of RPP-covered individuals will fall short of 70%, while over 35% of non-RPP individuals will have under-70% replacement. Although the share with over-70% replacement deteriorates slightly even for those with RPP coverage, the increasing share of second and third quintile households in more recent birth cohorts without 70% is most marked for those lacking RPP coverage.

There are two ways of looking at the issue. You can examine what share of the income quintile without a pension will fall short of the 70% income replacement; or, you can look at the percentage of those who fell short of the desired income that did not have a pension in each income quintile. This latter approach shows that for the 1940s-born cohort,

TABLE 2: PROJECTED SHARE OF INDIVIDUALS WITH < 70% RETIREMENT INCOME REPLACEMENT BY BIRTH COHORT AND INCOME QUINTILE

	Born in:							
Income Quintile	**1910s**	**1920s**	**1930s**	**1940s**	**1950s**	**1960s**	**1970s**	**1980s**
Of Individuals with RPP Coverage								
1	0%	0%	0%	0%	0%	0%	0%	1%
2	1%	0%	0%	1%	1%	3%	3%	8%
3	5%	2%	3%	6%	8%	11%	11%	19%
4	21%	14%	18%	20%	21%	24%	24%	32%
5	38%	38%	41%	38%	37%	39%	39%	44%
Of Individuals without RPP Coverage								
1	0%	0%	0%	0%	0%	0%	1%	1%
2	1%	1%	1%	2%	4%	7%	12%	17%
3	9%	6%	10%	15%	20%	25%	31%	35%
4	32%	29%	36%	35%	37%	40%	44%	47%
5	53%	57%	57%	47%	47%	46%	48%	49%
Of all individuals								
1	0%	0%	0%	0%	0%	0%	1%	1%
2	1%	1%	1%	2%	3%	6%	10%	13%
3	8%	4%	6%	10%	13%	17%	22%	25%
4	25%	18%	22%	23%	25%	28%	33%	36%
5	41%	40%	43%	39%	39%	40%	43%	46%
All	15%	13%	14%	15%	16%	18%	22%	24%

Source: TD Economics, Statistics Canada (LifePaths simulations)
Note: Housing treated as 100% Equity Annuitization

TABLE 3: AVERAGE RETIREMENT INCOME OF SECOND INCOME QUINTILE

Born in:	Coverage	Total Income*	Housing Annuity	Direct Income	Other Income	Transfers	CPP	RPP
1980s	RPP	37,796	7,318	30,477	7,461	6,350	8,640	8,026
	No RPP	34,959	7,188	27,771	12,184	7,123	7,435	1,528
1940s	RPP	30,200	6,007	24,193	5,440	6,900	5,783	6,070
	No RPP	27,969	6,108	21,861	7,495	7,683	5,156	1,528
1910s	RPP	23,726	2,734	20,992	7,276	7,372	2,395	3,949
	No RPP	19,222	2,660	16,562	5,002	8,238	2,398	924

Source: TD Economics, Statistics Canada (LifePaths Simulations)

100% of those in the second quintile without 70% replacement lack a RPP. For the 1980s-born cohort, the projection is that over 90% of the second income quintile without 70% replacement will be those without an RPP.

In the model, pension coverage itself is not projected to deteriorate markedly during the coming decades. Indeed the simulation predicts stagnation in RPP coverage, with coverage declining in the upper quintiles and actually expanding in the lower quintiles. This assumption could be challenged, as there is widespread concern, that unless checked, pension coverage will continue to fall. This would only cause the simulation results to deteriorate further.

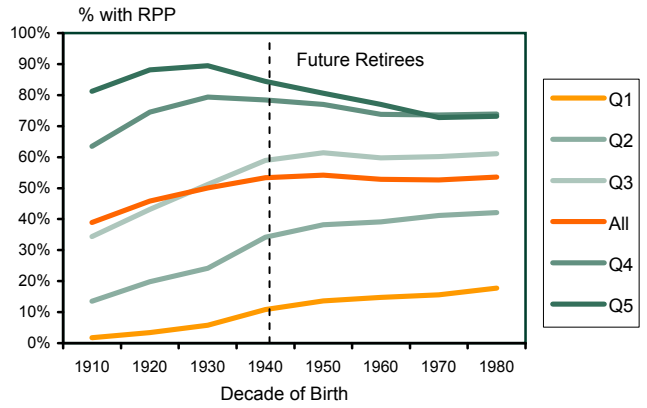
However, it is important to note that the observed decline in pension coverage relates more to the share of employees covered, rather than to the coverage of the population. As shown in Figure 21, despite a declining share of employees being covered by pensions, pension coverage of the working-age population has not fluctuated as widely, owing to heightened labour force participation (driven by greater female participation). As well, it could be argued that pension coverage may increase due to the aging population and likely future labour shortages, which might induce employers to maintain or expand benefits to attract workers.

Even so, from an equity perspective, it is useful to highlight the projected imbalance in RPP coverage across the income spectrum. Those covered by an RPP are concentrated in the upper income quintiles, while those lacking RPP coverage fall in lower income quintiles.

From the simulation, those without RPP coverage in the second income quintile of 1980s-born cohort will not, on average, save sufficiently to compensate for any of the gap that is created by the lack of RPP income relative to their RPP-covered counterparts. The accompanying chart presents the analysis on the average post-retirement incomes between RPP and non-RPP individuals, showing that RPP individuals of the same pre-retirement income quintile have greater post-retirement incomes. The small RPP income received by non-RPP individuals shown in the analysis accrues from RPP survivor benefits).

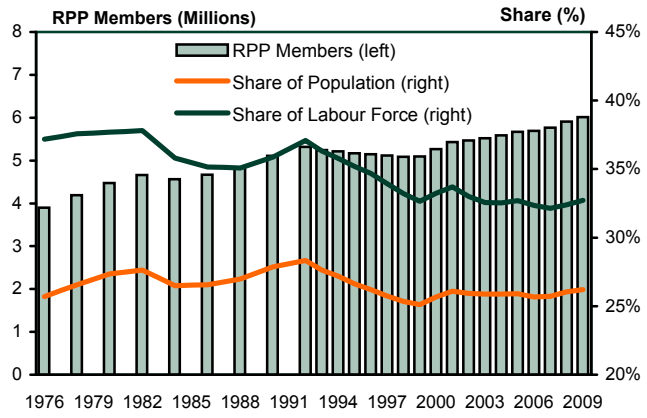
In showing lower average post-retirement income for non-RPP individuals relative to those with an RPP, these LifePaths simulation results may seem inconsistent with the Ostrovsky and Shellenberg (2009) finding that individuals without RPPs on average have higher income replacement (as discussed earlier in this paper). Readers should note the differences in datasets and approaches. We must again highlight the dependence of LifePaths results on the model's structure and assumptions, while noting that Ostrovsky

FIGURE 20: RPP COVERAGE BY BIRTH COHORT



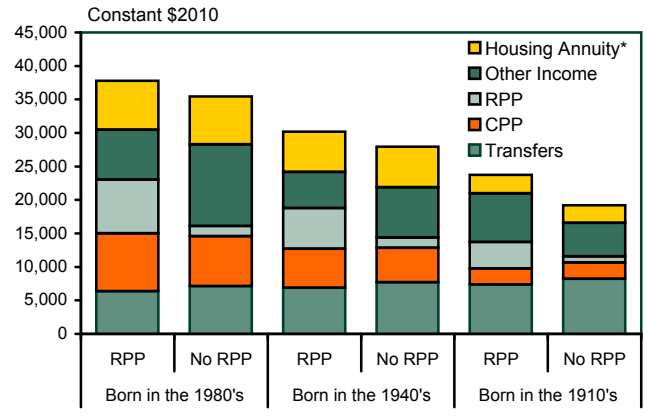
Source: TD Economics, Statistics Canada (LifePaths simulations)
Note: Housing treated as 100% Equity Annuitization

FIGURE 21: EMPLOYER PENSION PLAN COVERAGE



Source: Statistics Canada

FIGURE 22: AVERAGE RETIREMENT INCOME BY SOURCE FOR SECOND INCOME QUINTILE



Source: TD Economics, Statistics Canada (LifePaths Simulations)
* Assuming 100% equity annuitization of housing assets at retirement

and Schellenberg use actual tax records. It is important to recognize that both approaches have merit and are both critical to a robust understanding of the dynamics of retirement incomes. The apparent (but explicable) differences highlight the importance of investing in multiple approaches and datasets to dissect the issue.

Notably, the character of the tax data limits Ostrovsky and Shellenberg to the use of a limited set of years worth of data. Any short sample risks capturing an unrepresentative period – albeit the authors do use several years of data to address this issue. Unfortunately, data limitations do not allow Ostrovsky and Schellenberg to determine whether RPP members and non-members fare equally well across the entirety of their retirement. In contrast, the LifePaths model simulates the future work and retirement experiences of presently young cohort (for instance, born in the 1970s or 1980s) on the basis of the observed behaviour of their predecessor cohorts. This allows the simulation of a complete life history, but, as in any model, significant assumptions are involved.

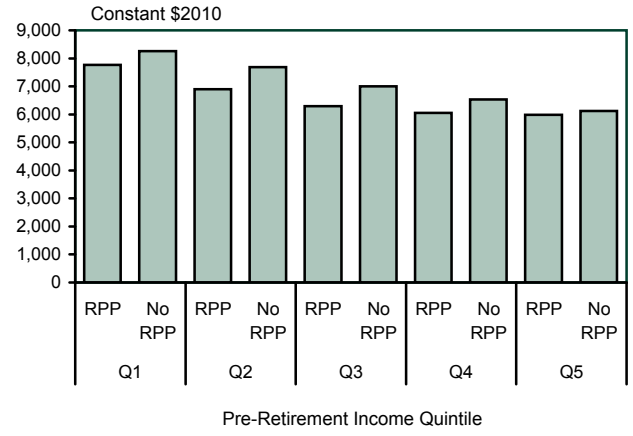
The difference in approaches explains the superficial differences in results. In particular, the different data sources will especially impact average results for those at the bottom and top of the income distribution: LifePaths is calibrated to survey data (including the census and cited household surveys) in which low-income and upper-income households are known to be undersurveyed. In contrast, tax data is more complete, since individuals do not generally escape filing taxes.

This underscores the importance of considering population-wide distributions and not only relying on averages when evaluating retirement incomes. As we have noted, median replacement and dispersion of outcomes in the Ostrovsky and Schellenberg study suggests a less favourable outcome for non-RPP-covered individuals. This is consistent with the LifePaths results.

The fiscal consequences

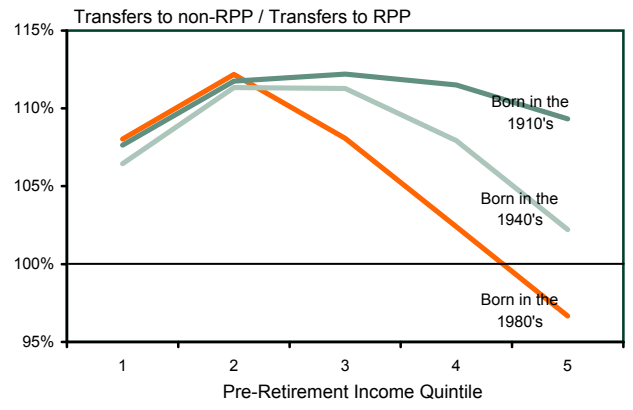
The under-saving by non-RPP households implies a higher cost for old-age transfers (OAS/GIS) than would otherwise be the case. As shown in Figure 23, LifePaths projects substantially higher average transfers to non-RPP households relative to RPP households across birth cohorts. For instance, for the 1980s-born cohort, non-RPP households with pre-retirement income in the second income quintile will receive approximately $800 (in constant 2010 dollars) more in OAS/GIS than will second income quintile households covered by an RPP. That is, non-RPP households with pre-retirement income in the second income quintile require roughly 12% greater transfers than those with RPP coverage.

FIGURE 23: AVERAGE OAS/GIS TRANSFERS FOR 1980s-BORN COHORT



Source: TD Economics; Statistics Canada (LifePaths Simulations)

FIGURE 24: AVERAGE TRANSFERS TO NON-RPP/RPP HOUSEHOLDS



Source: TD Economics; Statistics Canada (LifePaths Simulations)

For future cohorts, this "transfer gap" diminishes at the upper quintiles of the income distribution. However, based on the LifePaths simulations and exhibited in Figure 23, non-RPP households in the first to third pre-retirement income quintiles require substantially higher transfers than RPP covered household with similar pre-retirement income. As well, we highlight that RPP coverage is lowest in the lower income quintiles, implying a greater absolute fiscal cost resulting from lack of pension coverage in these quintiles.

It is important to stress that the future fiscal cost of old-age transfers is borne by future taxpayers. That is, the lack of adequate savings and the resulting need for greater old-age transfers imposes a higher fiscal burden on future generations. RPP coverage appears to mitigate this cost.

All else equal, this implies that increasing RPP coverage across the income distribution would substantially reduce the fiscal cost of old-age transfers.

So what should policy-makers do?

Having presented preliminary results showing increasing stress to retirement income adequacy in the coming decades, how should policy-makers respond?

First thing, get the data and identify the problem

The analysis in this paper intends to highlight the many gaps in our understanding of saving and wealth accumulation behaviour. We also want to underscore the importance of using household-level data, age-based accounts and microsimulation for informing effective design of changes to the pension system. A core recommendation is that the federal government allocate resources to Statistics Canada to 1) conduct the Survey of Financial Security on an ongoing basis, commencing in 2011; 2) implement age-based accounts within the household section of the System of National Accounts; and 3) fund further development of the LifePaths microsimulation model.

Specifically, having last been conducted in 2005, the Survey of Financial Security provides the only cross-cutting snapshot of the wealth of Canadians. Much has changed with regard to household assets and liabilities since 2005. The discussions around pension coverage have highlighted that distributions of wealth and income are much more telling than averages or aggregates when attempting to identify the source of problems and prescribe targeted solutions. If policy-makers are making fundamental and large-scale changes to retirement savings, they need up-to-date information to design those interventions effectively. For example, the need for a current and ongoing household wealth survey is especially pressing given the recent introduction of TFSAs, which have provided a powerful new vehicle for saving that seems to have been remarkably popular. Despite strong anecdotal uptake of TFSAs, we know very little about the distribution of TFSA holdings across households. After such an amendment to the third pillar, we need data to understand the impacts on household saving behaviour.

Lacking regular surveys of household wealth, the available dataset is insufficient to decompose the aggregate-level movements in savings and wealth between age groups and income groups. A key application of such surveys would be the development of age-based accounts that decompose the household sections of the System of National Accounts by age group. The household sector is not uniform and household behaviour differs across ages. We require age-based accounts to be able to better discern cyclical fluctuations in savings and wealth from the structural shifts in aggregate-level variables that result from demographic trends.

In addition to the importance of using subaggregate data, we have hopefully presented the usefulness of microsimulation to diagnose future problems. Allowing for simulation of future benefits and costs, LifePaths is a key tool for testing proposed changes to the retirement income framework. However, the model needs improvement with respect to certain components of net worth. As well, since a model can only be as good as the data with which it is fed, an up-to-date Survey of Financial Security is required to calibrate assumptions to present reality and to robustly incorporate recent innovations like TFSAs into the framework. LifePaths can be used to model policy interventions on a population-wide basis, but its utility on this front could be further improved. There are currently only four Statistics Canada staff engaged in the development and application of LifePaths, and the model's future may be in jeopardy, as no commitments have been made within the federal government for funding LifePaths beyond this fiscal year, let alone on an ongoing basis.

Policy-makers tend to under-invest in statistics and only realize the mistake when big decisions must be made. The gaps in our quantitative understanding of retirement income security on a population-wide basis point to a failure to fund key statistical programs. This error must be rectified.

Still room for immediate reforms

While better data and modeling should be a priority, there are several immediate reforms that can implemented to improve the incentives to save and invest. Broadly, these are:

- Enhancing the financial literacy of the Canadian population.
- Adjusting the tax treatment of registered retirement savings plans (RRSPs) and defined-contribution plans to be on an equal footing with defined-benefit employer pension plans.
- Harmonizing pension regulations between provinces and clarifying funding requirements for pension plans, as well as encouraging the build-up of capital buffers relative to a fund's risk-weighted assets.

First, improving financial literacy is necessary so that individuals have the capability to competently manage their own financial affairs across their lifetime. As mentioned above, it is evident that many households are consuming too much, taking on too much debt and relying excessively on asset appreciation for saving. Moreover, households are

being asked to make more and increasingly complex financial decisions. Fundamentally, households must understand the trade-off between consumption today and consumption tomorrow, and the lifecycle horizon for saving and spending. One's planning for eventual retirement depends on an understanding of how much to save from earned income in the present so as to build adequate assets for the future. Individuals also need an appreciation of the tax system and the ways in which taxes and transfers from government are designed to promote saving. While most Canadians manage their finances effectively, a significant minority appears to lack adequate financial literacy skills, making them vulnerable to poor financial outcomes – particularly during retirement.

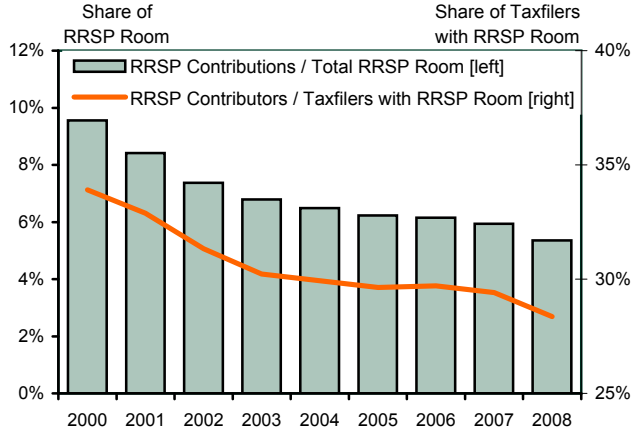
To address this shortfall, governments should undertake a national strategy for financial literacy, promoting lifetime learning. We propose three key elements to the strategy: 1) develop foundational skills in youth, 2) target financial education at key decision points made throughout adult life; and 3) support particular at-risk groups, including low income Canadians and newcomers. The recommendation of investing in greater financial literacy is discussed in depth in the forthcoming TD Economics report entitled, "The Case for a Lifetime Approach to Financial Literacy".

Second, improvements could be made to the RRSPs, TFSAs and defined contribution pension plans. These instruments are disadvantaged compared to DB plans because the annual limits are set too low, as they underestimate the required savings to reach the same outcomes and they fail to reflect the fact that there is no ability to invest more to make up for shortfalls when there are market corrections. Said another way, there is a compelling argument that current limits for RRSP and DC RPPs do not adequately account for the market risk involved in these plans' returns relative to the guaranteed payout for DB pension beneficiaries. In addition to higher limits, instituting a lifetime limit rather than an annual limit for contributions to RRSPs and TFSAs is another possibility with considerable merit. Although unused RRSP room can be carried forward in time, the fact is that there are times when individuals might wish to contribute more than their annual limit because of personal financial developments – for example windfall bonuses, inheritances or simply greater thrift in given a year. A lifetime limit could also encourage saving earlier in one's working life, which could allow greater wealth accumulation – as the common saying goes, it isn't timing the market that counts, it is time in the market.

However, while endorsing the recommended reforms to the third pillar on the basis of equity and efficiency between savings instruments, there are no illusions that such changes will dramatically spur saving by those individuals who fail to save adequately at present. RRSP contribution room may be a constraint for certain taxfilers, but contribution limits do not appear to be the binding constraint for the majority of taxfilers. Notably, as of 2008, only 28% of those taxfilers with RRSP room contributed to their RRSP and contributions represented only 5.4% of total RRSP room. Indeed, 2008 RRSP contributions constituted only 40% of the new contribution room for that year.

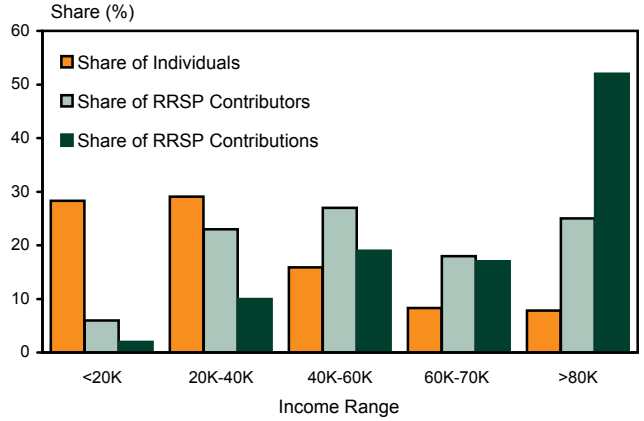
Moreover, policy-makers should be aware that RRSP contributions are strongly skewed to upper-income individuals. As exhibited in Figure 26, contributors with income greater than $80,000 comprise a share of contributors far out-stripping their share of the tax-filing population. Rais-

FIGURE 25: RRSP CONTRIBUTIONS



Source: Statistics Canada

FIGURE 26: DISTRIBUTION OF INCOME AND RRSP CONTRIBUTIONS



Source: Statistics Canada

ing RRSP contribution limits would help higher income individuals meet the desired income replacement ratio, and as noted earlier, many higher income individuals are not hitting the mark. Nonetheless, further retirement security reforms would likely be required to induce greater savings by middle-income Canadians.

Lastly, raising the age from 71 at which RRSP accumulated funds must gradually start to be withdrawn or rolled into Registered Retirement Income Funds (RRIFs) would also help many seniors to avoid unnecessary tax payouts and provide more years in which to accumulate assets tax free.

Third, efforts should be made to improve the efficiency of employer-sponsored defined benefit plans and help encourage their continued or expanded use. This could be facilitated by harmonization of the myriad of pension rules that exist across the provinces. The regulatory environment should also be amended – particularly with regard to asymmetric risks around funding: DB pension plan surpluses are shared 50/50 between plan sponsors but unfunded liabilities belong entirely to the employers. In an ideal world, employer-sponsored defined benefit pension plans should be fully-funded over the business cycle and have adequate capital buffers, but such regulatory requirements would need to be implemented over an extended period of time given the present underfunding of many DB plans. At a minimum, reasonable minimum solvency ratios before allowing benefit improvements should be established. We also suggest that employees should have the ability to make contributions to top-up benefits in a DB plan. We would caution, however, against raising the priority of pensioners on the assets of a firm in bankruptcy, as this would likely materially raise the debt borrowing costs for firms already offering DB plans in a discriminatory manner.

Further research likely to conclude greater pension coverage is needed

The policy recommendations discussed above are made on the grounds of improving the efficiency and fairness of the existing retirement income security system for all Canadians. However, the drawback is that they do not explicitly target the 'at-risk' low-middle income population. Based on the available Statistics Canada data and our microsimulation work, we are of the opinion that increased pension coverage is likely warranted and expect that this conclusion will be confirmed by future research.

The current pension reform debate has already identified a number of possible policy options to improve pension income. Although there are many variations, one can summarize three key options:

- Enhanced replacement rates under the Canadian Pension Plan
- A public supplementary defined contribution pension plan with mandatory enrolment but opt-out for all workers without a pension (voluntary opt-in for self-employed workers)
- Legislation that enables multi-employer pensions and broadens the ability of financial institutions to offer third-party pensions.

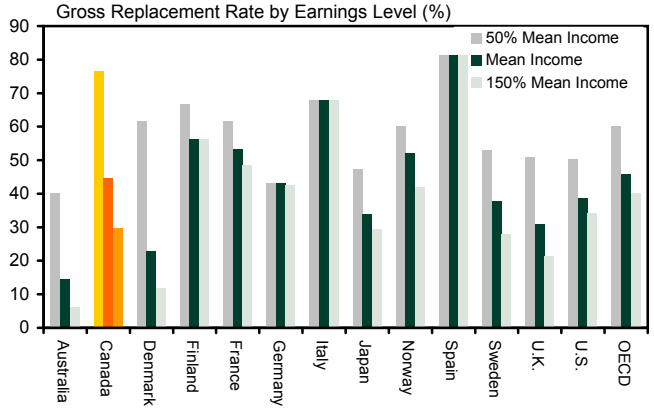
Ultimately, all of the choices have considerable merit, but each also has drawbacks, which we will take a moment to review.

Option 1: Enhanced CPP

Under the proposal by the Canadian Labour Congress[9], CPP would be enhanced from its present 25% replacement rate to provide replacement of 50% of earnings up to the yearly maximum pensionable earnings (YMPE; presently $47,200 and indexed to the average wage). Keith Horner evaluates an alternative scheme with a 40% replacement rate to the YMPE and a 25% replacement rate on earnings up to two times the YMPE ($94,400 at present). Under both schemes, enhanced benefits would be phased-in so as to be inter-generationally equitable.

As Horner (2010) observes[10], such a plan would involve greater risk-pooling, minimize administrative costs and, by enabling a riskier and longer-term portfolio, raise expected returns. The heightened investment returns are somewhat corroborated by the performance of the CPP Investment Board. Moreover, annuitization (provision of a lifetime defined-benefit) is less costly given that "adverse selection" is avoided.[11] That is, a defined-benefit can be provided with a lower cost for any individual because, being mandatory,

FIGURE 27: INCOME REPLACEMENT BY PUBLIC PENSIONS FOR SELECT OECD



Source: OECD (2009)

these benefits are provided on a population-wide basis by the insurer, rather than subject to greater opt-in by individuals with a private expectation of having a longer lifespan.

However, the enhanced CPP would inevitably crowd-out other forms of savings through individual RRSPs and RPPs. While the present CPP fulfills a valuable role in compelling a base level of retirement savings, requiring additional savings from all Canadians would arguably encroach on individuals' choices about how and when to save in accordance with their own preferences and risk tolerance. Many Canadians are already saving adequately and the "at-risk" population consists of those who are not. Enhanced CPP then represents somewhat of a "shot-gun" approach to addressing what our modeling suggests requires a more targeted intervention. As well, in an international context, Canada's public pension system (including the replacement by OAS/GIS) achieves gross replacement rates exceeding the OECD average for an individual with 50% of mean earnings and near the OECD average for an individual with mean earnings. Few public pension systems achieve gross replacement rates comparable to those in Canada for low-income individuals, and, even for individuals with mean earnings, public pensions in Canada exceed replacement rates in Germany, Japan and the U.K.

Option 2: Publicly provided supplementary pension plan

This option involves a public default opt-in, voluntary opt-out, supplementary defined contribution pension plan for workers that do not have an employer pension plan. The plan might allow employers to make contributions, or it could be simply based on employee contributions. There is a suggestion that self-employed workers might also be allowed to participate. Ambachtsheer (2008, 2009) has championed a supplementary plan as an option to be pursued at a national level.[12] The Alberta/British Columbia Joint Expert Panel on Pension Standards outlined how this could also be pursued regionally if the federal government was not willing to undertake such a program, although this was recognized as less than optimal.[13]

A public supplementary defined contribution pension plan option has considerable benefits. The automatic enrolment, voluntary opt-out, feature is particularly powerful. Historical experience of financial behaviour suggests that automatic participation in programs, with voluntary opt-out, and automatic payroll deductions lead to significantly greater saving.[14] Many individuals tend to have inertia and will not go to the work of declining once enrolled. They will also tend to change their consumption pattern to accommodate the additional saving. Meanwhile, the opt-out feature is desirable, as it maintains personal choice. Recognizing that income-earners in the upper-half of the income distribution already have high autonomous savings rates, certain variants on the proposal would limit default enrolment to the lower-half of the income distribution but allow for opt-in by any household. Such a large centralized fund of locked-in annual contributions would presumably leverage the benefits of risk-pooling, low administrative fees and low-cost annuitization. If constituted on a national basis, such a fund would also ensure portability across jobs and geographies.

The option does, however, have drawbacks. First, if designated as a supplementary CPP, it would create considerable confusion with the existing DB plan and there might be an implicit expectation of a government guarantee. Second, a supplementary CPP if managed through the CPP Investment Board might lead to excess scale to that institution which operates in a small relatively illiquid Canadian financial market. That is, direct management of so large a share of total Canadian-denominated assets by a single player could impair the efficient operation of Canadian bond and equity markets. Accordingly, it might be beneficial if the management of the funds be spread across a variety of asset managers through competitive tender. Competitive tender would constrain administrative costs for asset management while protecting financial markets from dominance of a single player. Third, as a DC plan, pension plan members would be subject to investment risk and plan participants would require financial advice. In terms of the latter, it is not evident how this advice would be delivered, as the current government-provided programs do not provide such support.

Option 3: Multi-employer and non-employer pension plans

A third option is a broadening of pension providers as proposed by Pierlot (2008)[15] and endorsed by the Canadian Bankers' Association. The Income Tax Act requires that pensions be based on "service as employees". By breaking the employee-employer relationship requirement, an expanded range of competitive options could be made available to workers. For example, employers could establish voluntary contribution multi-employer pension plans and financial institutions could offer defined-contribution pension plans without any tie to a specific employer.

While this option could increase pension coverage, some have argued that such plans would be more costly than a public pension option because annuitization would be relatively more costly and such plans would not benefit from the economies of scale or degree of risk-pooling. The other disadvantage is that individuals would need to actively

choose to participate in the plan, and those opting not to take of advantage of them might be the 'at-risk' population. This expansion of private pension options would be enhanced if it was accompanied by policies or efforts to encourage firms to default enroll workers into either an employer pension plan or one of the multi-employer or third-party pension vehicles.

Our assessment

So, which policy option do we favour? The goal is to increase income replacement for the 'at-risk' population of retirees. While there is considerable merit to an expanded CPP/QPP, this option is not targeted. The other two options both hold out the possibility of raising saving for the current pool of workers who do not have pension coverage. The public supplementary DC pension plan seems to have the advantage because of the default opt-in dimension. Heightening the private pension options could complement the public option. If a similar default opt-in arrangement could be applied to the new private sector offerings, the public supplementary pension could lose its primary advantage.

There is one other policy issue. If the concern is income replacement, there is an inherent problem that OAS/GIS is only indexed to inflation. Indexing OAS/GIS to wage growth may be justified on the basis of ensuring that the Pillar 1 "floor" keeps up with income-based measures of poverty. However, OAS/GIS increases have a significant fiscal cost – particularly if these transfers remain as widespread as at present. We would see scope for wage-indexing of OAS/GIS if the tax-back threshold for OAS was lowered and measures put in place to compel greater savings for middle-income individuals.[16]

Conclusions

To wrap up, our results indicate that a greater share of Canadians is at risk of experiencing a decline in their standard of living in retirement. While it is ultimately the responsibility of individuals to save adequately for retirement, there is an important role for public policy to help encourage saving. To that end, it is timely to have a national debate about how to reform the current retirement income security system.

Based on the available data, there is much we do not understand that requires further investigation. For example, what should the target of income replacement be? The 'at-risk' population is very different if 50% is the right ratio rather than 70%. Why is a significant minority saving inadequately? It is evident that the financial instruments are available with which to save – although we suspect that pension coverage is a big part of the story. How will the 'at-risk' population evolve over time? Our analysis suggests that future retirees will not fare as well as current and past retirees. Accordingly, our position is that policy-makers should take a "rush prudently, but don't run blindly" approach.

There should be urgent efforts made to improve data collection and analysis in order to better diagnose the problem. To this end, TD Economics views this report as an initial contribution to the national debate. However, the recommendation for more research should not be interpreted as condoning complacency. Our research strongly indicates a need to promote greater savings. Improving financial literacy, enhancing the third pillar of savings vehicles, and expanding the range of private pension options can only boost the opportunities and incentives to save.

Therefore, while additional research is ongoing, a national financial literacy strategy should be implemented, and we commend the federal government on making considerable progress on this front. Improvements to the existing retirement income system could also be initiated, but one should acknowledge that it is being done on the grounds of efficiency and fairness. Changes to allow multi-employer and third-party pension plans could also be implemented while further research is being pursued – as more choices are always better than fewer.

The goal should be to better identify the problem over the next couple of years, and then a targeted policy response should be pursued. We have exhibited the tools and datasets that we recommend should be used to provide definitive resolution on the key questions. In particular, Statistics Canada requires funding commitments for ongoing household-level surveys on net worth and savings, as well as further development of the LifePaths microsimulation tool. Research should identify the at-risk groups, exploring replacement rates under a variety of standards (net income, consumption or earnings) and benchmarks. LifePaths can be used to simulate the extension of the retirement age and different schemes for expanding of pension coverage.

Our intuition is that such further research will show conclusively that lack of pension coverage is an issue. If so, a government supplementary pension plan seems to have an advantage in targeting the most 'at-risk' population – although the advantage would be diminished if firms could be encouraged to default enroll workers in private multi-employer and non-employer plans. In terms of ensuring that Canada maintains its past success in keeping seniors out of poverty, policy-makers might also want to explore the possibility enhancing OAS/GIS to keep pace with national wage growth.

APPENDIX: What data is available and what data is missing?

The issue of income security is not new. And researchers have long struggled with the lack of a definitive data source that captures both the savings outcomes of Canadians and their wealth positions at a more granular level – particularly resolving issues between Canadians of different incomes and ages across time. Statistics Canada conducts occasional household-level surveys of wealth and maintains administrative datasets, such as those based on tax returns. However, the infrequency of wealth surveys, and the confidentiality of the administrative datasets limit our picture of wealth and saving across time and groups.

The Survey of Financial Security (SFS) is a crucial dataset to understand the wealth holdings of the Canadian population. Without a household-level survey of wealth, we cannot identify what assets and liabilities households of different ages and income hold at a point in time. Without an ongoing survey, we cannot know how the financial position of households evolves over time. The usefulness of the survey, therefore, suffers because it has only been conducted twice, once in 1999 and again in 2005, and so provides only a pair of snapshots rather than a more useful time series. In contrast, the U.S. Federal Reserve has conducted its comparable Survey of Consumer Finances every three years, commencing in 1983. The absence of an ongoing Survey of Financial Security inhibits the calculation of a balance sheet savings rate that includes realized and unrealized capital gains. As we note below, understanding the increased reliance on asset appreciation rather than savings from current income is key to our understanding of households' preparation for retirement.

With regards to savings from current income, useful surveys conducted by Statistics Canada include the Survey of Household Spending (SHS), the Survey of Labour and Income Dynamics (SLID), and their respective precursors, the Family Expenditure Survey and Survey of Consumer Finances (SCF). These provide the ability to calculate savings rates by age cohort which provide more insight than the personal savings rate, since the latter can be skewed downwards by factors totally unrelated to actual observed savings behaviour. They also cover a significantly long timeframe, currently from 1976 to 2007. However, reconciliation of savings rates between the survey and the aggregate-level personal savings rate in the System of National Accounts (SNA) is a difficult exercise. Even when adjusting for differences in the definition of income, discrepancies are present between the SNA personal savings rate and that imputed from household level surveys.

As well, administrative data based on tax files constitute a useful source of data, allowing sources of incomes of retirees to be identified. Since they are drawn from tax returns, the files capture pension annuities, bridge employment income, capital gains, interest and dividend income. Moreover, these tax files are "longitudinal," uniquely allowing a given individual to be tracked over time. Obviously, given the extreme sensitivity of such datasets, only Statistics Canada researchers can access these files and do so under very strict confidentiality.

However, while the dataset is potentially rich in detail, Statistics Canada researchers still appear at a preliminary stage of using this dataset for evaluating retirement coverage. In order to identify pension coverage, researchers rely on presence of pension adjustments on previous tax returns. Indeed, it is useful that both LaRochelle-Côté et al. (2008) and Schellenberg and Ostrovsky (2009) used tax filings as their primary data source. Unfortunately, tax filings also have their disadvantages. They do not capture income that is derived from sources that are not reported in tax filings. For instance, non-registered assets that have accumulated that are not used to purchase an annuity, but are simply drawn down in retirement. Also, tax filings do not have an explicit variable that governs who and who is not covered by an RPP. Schellenberg and Ostrovsky (2009) use the presence of a pension adjustment in both 1991 and 1992 as their indicator of pension coverage, but the authors acknowledge that it is not a perfect one.

To that end, data on pension coverage would be extremely useful, but not simply the number of employees who have coverage, since this is already available via the Pension Plans in Canada survey from Statistics Canada. Pensions can take many different forms with different contribution rates and types, and different benefit rates and types; defined benefit, defined contribution, hybrid plans, combination plans, Group RRSPs, are all forms of employer-sponsored savings and can provide annuities in retirement. Thus, a detailed dataset which includes data on how much people are contributing to what kind of plan that is broken down by income quintile and age cohort would be extraordinarily useful. Continuous iterations of the Survey of Financial Security would also be highly desirable since it provides the most comprehensive breakdown of asset holdings to date. If the results were publicly available and further broken down by pension coverage, analysts would be able to develop highly targeted policy towards impacting the savings behaviour of Canadians.

Endnotes

1 We specifically point to the initiatives of the work of federal Department of Finance (Research Working Group on Retirement Income Adequacy chaired by Ted Menzies, with research direction by Jack Mintz), the Province of Ontario (a review provided by Bob Baldwin) and ministries of finance of Alberta and B.C., as well as the initiatives of the C.D. Howe Institute, Institute for Research on Public Policy around pension reform and retirement income security more broadly.

For the summary report of Research Working Group on Retirement Income Adequacy by Jack Mintz (2009) and links to research papers, see: http://www.fin.gc.ca/activty/pubs/pension/riar-narr-eng.asp

For Bob Baldwin's (2009) review of the pension system for the province of Ontario, see: http://www.fin.gov.on.ca/en/consultations/pension/dec09report.html

For the report of the joint Alberta/B.C. expert panel on pension standards, see: http://www.finance.alberta.ca/publications/pensions/eppa.html

For the C.D. Howe Institute Pension Papers initiative, see: http://www.cdhowe.org/display.cfm?page=PensionPapers

For the IRPP Symposium on Retirement Income Adequacy, see: http://www.irpp.org/events/archive/20100504/papers.htm

2 OECD. 2009. "Pensions at a Glance 2009: Highlights for Canada".

3 LaRochelle-Côté, Sebastien, Myles, John & Picot, Garnett. March 2008. "Income Security and Stability During Retirement in Canada." Statistics Canada. Analytical Studies Branch Research Paper Series.

It should be noted that the authors use an income definition (adult-equivalent-income) that adjusts for family size. The authors further calculate "permanent" income by averaging over three years of income to account for temporary fluctuations in a given year.

4 Horner, Keith. 2009. "Retirement Savings by Canadian Households." Department of Finance. Report for the Research Working Group on Retirement Income Adequacy.

5 Pyper, Wendy. 2008, "RRSP Investments." Statistics Canada. http://www.statcan.gc.ca/pub/75-001-x/2008102/pdf/10520-eng.pdf

6 Ostrovsky, Yuri and Grant Schellenberg 2009, "Pension Coverage, Retirement Status and Replacement Rates among a Cohort of Canadian Seniors," Statistics Canada.

7 In such historical comparisons, various distortions from inflation to the personal savings rate have been alleged and TD Economics plans additional research around this issue.

8 In particular, we are grateful to Kevin Moore and Steve Gribble for guidance and support in our use of the LifePaths model. For details on LifePaths, see: http://www.statcan.gc.ca/microsimulation/lifepaths/lifepaths-eng.htm

A technical annex and our code for the simulation is available upon request.

9 Canadian Labour Congress. 2009. "Security, Adequacy, Fairness: Labour's Proposals for the Future of Canadian Pensions" Available at: http://www.canadianlabour.ca/sites/default/files/pdfs/Pension-Policy-Paper-2009-EN.pdf

10 Horner, Keith. 2010 "Assessing Pension Options." Presentation at the IRPP Symposium "Avenues for Reforming the Canadian Retirement Income System." May 4-5, 2010. Available at: http://www.irpp.org/events/archive/20100504/papers.htm

11 By "annuitization", we mean that assets can be converted into an assured stream of income for the remainder of their life at the time of retirement. A market may fail to provide low-cost annuitization if individuals possess private information about their risk of mortality. The longer an individual's life expectancy, the greater the value of the annuity. Longer lived individuals would opt-in, increasing the break-even cost of an annuitizing assets to a level that an individual who expects a shorter lifespan is unwilling to pay. This "adverse selection" increases the cost and limits the availability of annuitization. By pooling mortality risks across the population, since the distribution of longevities are known, the annuity can be provided with a lower premium for mortality risk.

12 Ambachtsheer, Keith. "Pension Reform: How Canada Can Lead the World." C.D. Howe Benefactors Lecture (November 2009).

Ambachtsheer, Keith. "The Canada Supplementary Pension Plan (CSPP): Towards an Adequate, Affordable Pension for All Canadians." C.D. Howe Commentary 265 (May 2008).

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