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Retirement Consumption, Risk Perception and Planning Objectives in Canada: An Interview With Mary Hardy

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A research study conducted by the Department of Statistics and Actuarial Science, University of Waterloo (Ontario, Canada) explored retirement consumption, risk perception, and alternative objective functions and decision-making models in the retirement-planning phase of Canadians' lives. I interviewed Mary Hardy, one of the researchers, to outline the conclusions from that study. The

full study can be found at <http://www.cia-ica.ca/docs/default-source/2018/218083e.pdf>.

Anna Rappaport (AR): What motivated you to do this research and what were the underlying goals?

Mary Hardy (MH): For the past few years, Professor David Saunders and I have worked with several talented graduate students on several applied topics on pension design and retirement income draw-down strategies. Dr. Saisai Zhang joined us around four years ago to work on a project on annuitization using fixed and variable payout annuities. As we developed that study, we became increasingly disillusioned with the standard academic approach to annuitization, in which an optimal strategy is determined by maximizing the expected discounted utility, typically assuming a constant relative risk aversion (CRRA) utility function. In almost every case, across hundreds of published academic papers, the result of this exercise indicates that the optimal strategy is full annuitization of pension assets. The disparity of these results with the real-world fact that very few people purchase annuities has been dubbed the "annuity puzzle."

The underlying premise of the annuity puzzle is that maximizing the expected discounted CRRA utility generates results that are both normative (how people should behave) and descriptive (how people do behave), and that there is therefore no explanation for the failure of millions of retirees to purchase annuities. It seemed likely to us that, in fact, discounted CRRA utility may be neither descriptive nor normative, and that individuals who do not purchase annuities may be making rational decisions but based on an objective function that is not (yet) captured by economic models. A survey seemed the best way to determine, at least, whether the annuity puzzle assumptions are descriptive.

So, we designed the survey with some specific quantitative objectives, including:

- Do people make decisions under uncertainty that are consistent with utility maximization? If so, is CRRA the right form for the utility function, and what is the risk aversion coefficient?
- The standard subjective discount factors used in the annuitization literature (denoted by b) lie in the range 0.95 to 0.98 per year; is this truly descriptive of retirees' time preferences?
- What is the maximum price retirees would be willing to pay for a life annuity, given a hypothetical pension pot?
- Do respondents have an accurate idea of their life expectancy? What about the probability of living to extreme old age? This could impact the value placed on the longevity insurance provided by annuities.

In addition, we wanted to explore qualitative issues and concerns that might help us develop better models for decumulation strategies, reflecting rational priorities of retirees, or might indicate areas where there could be substantial benefit from improved public education.

AR: Who were the sponsors?

MH: We were funded by a significant grant from the Canadian Institute of Actuaries, which was matched by the University of Waterloo. Additional costs were funded from individual research grants awarded to David Saunders and me by the Natural Science and Engineering Research Council of Canada (NSERC).

AR: What was your methodology?

MH: We have an excellent Survey Research Centre (SRC) here at the University of Waterloo. They administered the survey and worked with us throughout to ensure that the design was validated and that the questions were consistent. The SRC used a third-party vendor to recruit respondents. The online survey was distributed to Ontario residents between the ages of 50 and 80. The survey ran until there were 1,000 completed questionnaires, with 500 respondents self-identified as “pre-retired” and 500 identified as “retired.” The survey was adaptive, meaning that later, questions were dynamically adjusted to reflect respondents’ earlier answers with respect to age, retirement status, marital status, sex and wealth category. The response rate was 7.7 percent, which is low compared with the usual panel response rate of 10 to 15 percent, but not surprising, as the survey was longer and more complex than most.

The first part of the survey covered demographic information; in the second part, we elicited respondents’ expected/actual level of fixed and liquid assets at retirement, and expected/actual consumption in retirement, with income sources. We asked qualitative questions on retirement income priorities. We explored subjective estimates of longevity. Finally, we determined at what price, if any, the respondent would be willing to purchase units of life annuity income. In the third section, we focused on risk preferences, including qualitative questions on risk attitudes and more complex questions involving choice under uncertainty and time preference, designed to elicit information on relative risk aversion and subjective discount factor.

In the final section, we asked respondents to select between different income options for a hypothetical pension benefit. The first part involved inflation protection, and the second part considered an equity-linked pension, similar to a variable-payout annuity. Over a series of questions, we asked respondents to choose between a level, certain pension (of specified amount) and risky income options, each illustrated by showing 10 possible, equally likely income paths.

AR: What were your most important findings?

MH:

1. Respondents really don’t like annuities. When given a hypothetical amount of money available to them at their hypothetical retirement, 84 percent would not pay even half of market price for a life annuity, and most wouldn’t buy one at any price. The reasons given included fear of default of the annuity provider (respondents were unaware that annuity income from Canadian insurers is protected in the event of default) and loss of financial security—that is, for the respondents, there is more security in having the assets available instantly than in having them converted to an income stream. Several respondents referred to annuities as a gamble, and some as a “scam.”
2. The subjective discount factor elicited from our respondents is very close to 1.0, which is very different from the standard range of assumptions (0.95–0.98) used in the literature, and more rational, too. Suppose a 60-year-old retiree knows for sure that she will live to age 90 (as mortality is handled separately), and suppose for simplicity that there is no inflation. Then using the typical (according to the academic studies) subjective discount factor $b = 0.95$ means that the retiree values \$100 of consumption today as equivalent to \$21 (or 0.95^{30}) of consumption at age 90. Note that this is not because of interest accumulation. This is pure consumption; asset returns are managed elsewhere in the calculations. It is very interesting that while the economists are making this bizarre assumption for their “rational agents,” in practice the majority of our respondents are making the much more rational assumption that, if they survive, \$100 has the same utility at age 90 as it does at age 75 or at age 60.
3. Responses for pre-retirees were consistent with decreasing relative risk aversion rather than CRRA. Retirees were more consistent with CRRA, but the results are not compelling for or against. Generally, risk aversion seemed to increase in retirement, which seems logical.
4. When asked to choose between more or less risky retirement income options, there was some willingness to take downside risk in return for the possibility of high income.
5. Respondents were quite accurate in assessing their life expectancy but significantly underestimated their risk of living to 95 or more, compared with population mortality tables. This could be an issue with respect to dissipation risk, especially with respect to long-term care costs.

AR: Were there any surprises?

MH: Perhaps the biggest surprise for me was the proportion of pre-retirees with no property wealth and little or no savings. This group represented about 10 percent of respondents. I was afraid that this was unrepresentative of the population, but it isn't. There are a lot of Canadians who will be entirely reliant on government benefits and employment income to see them through old age. Even considering those who have some savings or who own property, most have total wealth far below the amount that would make any kind of annuitization worthwhile. For a large proportion of the population, the annuity puzzle is moot.

I was also surprised that so many respondents were willing to choose the risky retirement income stream over the steady one. I expected people to be more concerned about the possibility of low income, but there was a distinct attraction for many respondents to the cases where one or two paths looked really, really good, even where the other paths looked really bad.

AR: Were there any disappointments?

MH: Not really a disappointment, but a regret. I think our survey assumed a level of financial security that is nowhere near reality for a significant minority of the respondents. For example, asking people with little or no assets why they do not use a financial adviser is not necessary or appropriate. It is not surprising that some respondents were alienated by the implicit messaging.

AR: Do you think the findings will hold beyond Canada? Which are likely and which not?

MH: Our respondents were not concerned about health care costs, and there was no concern about the potential for government benefits to "run out." These are likely to be significantly different to U.S. retirees and near-retirement workers, and the impact of greater underlying security for Canadians might also impact risk aversion; a stronger government safety net allows more risk taking by retirees. I would expect our results to be similar to other countries with comparable government-provided health and pension benefits.

AR: Are you thinking about additional work on related topics?

MH: We are still distilling the profusion of data from the survey into a couple of targeted research papers, but analyzing the

answers has given us lots of ideas as to how we might change the survey if we get the chance to follow up. And we are committed to working on applied pension topics for the foreseeable future. I think it's the most important area of actuarial and financial research right now. I foresee the results of this work being funneled through to work on designing employer-sponsored risk-sharing pension plans, for example.

AR: Are you familiar with the Society of Actuaries retirement risk research? What do you see as similarities and differences?

MH: Of course, we were influenced by the SOA retirement risk surveys, and they motivated us to examine a "made in Canada" (or at least, made in Ontario) comparison to the U.S. results. The SOA survey is much more comprehensive in ascertaining attitudes, sources of wealth and income, and actual and proposed wealth management strategies. In both surveys, we see an expectation of rising retirement ages. Long-term care costs are a concern in the Ontario survey, particularly for higher-wealth respondents, and this mirrors the results of the SOA survey. We did not ask about concerns over health care costs, and none of our respondents raised this as an issue. Health care is essentially free at point of use in Ontario for seniors (with the exception of some prescription fees, averaging less than \$250 per year). In contrast, this is one of the greatest concerns in the SOA survey.

Overall though, the surveys are very different in style and scope, because our predominant motivation was the desire to validate, or not, the fundamental assumptions of the annuitization literature—to assess who, exactly, is being irrational here. Is it the actuaries and financial economists, who continue to tell people that spending all their assets on annuities is optimal? Or is it the people, who may have perfectly valid and rational reasons for not annuitizing. In the end, the answer appears to be that there is rationality and irrationality on both sides, and there's still much work to be done to bridge the gap between theory and practice. ■



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