LIVING TO 100 SYMPOSIUM*

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IMPACT OF AGING POPULATIONS

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MR. EDWIN HUSTEAD: I have a couple of comments; one is on the guaranteed refund annuity. The states tend to have those too, and a lot of people take them. I've always wondered why, because if the husband and wife are retiring and they don't need the assets, they seem to have a feeling of security that if they both die the next day there will be money, but who does it go to? They're both dead.

Mr. Andrews, you mentioned that if mortality improvement is greater than expected or equity returns lower, there will be pressure on the defined benefits system in Canada, and benefits won't be paid. I assume you mean by that that some plans will be shut down, and some will cut their benefits. As you probably have seen in the United States, the PBGC is under a lot of pressure now because of the airline terminations. Is there a pension benefit guarantee for corporations? What happens when a plan goes out of business in Canada?

MR. DOUGLAS ANDREWS: There is no PBGC the way you have one in the United States, but in one of the jurisdictions in Ontario there is a pension benefit guarantee fund that provides for certain benefits to be paid. So what I was speaking to was the event that a sponsor became bankrupt and was no longer able to fund the plan, then there wouldn't be any guarantee of that benefit.

MR. LEONID GAVRILOV: I don't have a question, just a comment regarding select cohorts of years. Today our team will present data that demonstrate that there are specific cohorts of years for months of birth after age eighty. Social Security data, and this is not astrology, not necessarily, might have been related to such things as seasonal vitamin deficiency in the past, because there were some studies on deficiencies in vitamins and other nutrients. We are very concerned about pollution and very negligent about all this stuff with nutrients. There are very

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good biochemical studies by established researchers that demonstrate that these are serious things, just as a hypothesis.

And, of course, there were also some studies on early-life events and conditions. A group of historical demographers in Sweden have found that in some years there was a burst of infectious diseases in children before age one year, and then these people have lower life expectancy. So this raises possible explanations concerning seasonal variation and deficiency in vitamins and nutrients and seasonal exposure to infectious diseases early in life.

MR. KRZYSZTOF OSTASZEWSKI: I will comment. Obviously this tells us that your zodiac sign really matters, as you can see. I'm wondering if you can tell us which zodiac sign is the best for longevity, because that seems to be the indication. But part of the reason why I have discussed the possible definitions that I have covered is that we really don't have one clear definition of a select cohort, and there are other different perspectives on this. One is a demographic perspective: they would like to know whether people live longer, but there's sort of a financial perspective of whether this is going to cost somebody more. And you could have two divergent definitions based on those two perspectives. So part of the purpose of our paper is to try to get your thoughts on how you could define this cohort and how you should define it. I'm still waiting for that zodiac sign. Which month of birth is best?

MR. GAVRILOV: Well, the results are a little bit different depending on what country you are studying and what period. It's not astronomy. It's not some global thing, but it looks like if you are born in June, then you have the lowest life expectancy. And it's significant, and we will demonstrate this today. So it looks like for situations, when you look year by year, you can notice something, but you miss a lot because it is high frequency, it is seasonal situations. So sometimes you can find a bad year and a good year, but you can get much more information if you get high resolution and go by month. You then you will say, “ah, this is much larger.”

MR. KRZYSZTOF OSTASZEWSKI: Because that makes it hard to get the data.

MR. PRAKASH BHATTACHARYA: I want to ask a question of Mr. Andrews. You said that 34 percent of the families in Canada don't have any retirement assets. So I would just like to know how these people are managing their postretirement days. Actually, in India we have a giant family system where the sons and daughters are taking care of their aged parents. How does the system work in Canada? Thank you.

MR. ANDREWS: What you report on the system in India was what a cab driver told me when he first picked me up in India about 30 years ago, that he had eight children and that was his retirement planning. We don't have nearly as large families in Canada generally, so we can't rely on that.

When we're referring to no pension assets, we're referring to none from a pension plan. There

may be sources of income, for example, the individual may have worked and been in the Canada pension plan, so that would be providing them with an income, but it's not considered to be an asset. And as Bruce MacDonald referred to when he said what I had omitted to consider was the old-age security payments, these are a demigrant to people who are 65 and up who meet certain residency requirements provided they apply for it. There would be an amount paid, and there's also a guaranteed income supplement, which is an income-tested amount that people can receive. So there can be sources of income other than pension assets.

FROM THE FLOOR: I have a question for you. Do you know the equity risk premium looking back for the entire twentieth century in Canada? Because in the United States I believe it was in the range of 5 percent for the entire twentieth century. I was quite shocked by how low the numbers were, but maybe that's the way it should be?

MR. ANDREWS: I don't have it for the entire twentieth century. The statistics that I was working from actually did go back 70 years, but I was working with the 50-year period as being long enough, and that was 3.17 percent, but it has been higher in the United States than it has been in Canada over those longer periods.

MR. OSTASZEWSKI: Of course, that has not been the experience of people who invested in 2000 to 2002, but that's actually something that is a general question: how is it that it's been so high for that hundred years, for the twentieth century in the United States? But if it was high for that hundred years, maybe it won't be so high for the next hundred years.

MR. RICHARD HUMBLE: I don't have a question, just a comment. I think it is critically important in looking at these cohort effects to understand what the reasons for them are, because depending on the reason for the cohort effect, that's the only way you can determine what you're supposed to do in terms of assuming its continuance in the future. And there has been quite an amount of a cohort effect observed in the United Kingdom, which obviously was referred to in terms of Richard Willet's paper. Now, I think that we've done quite a bit of work looking at this sort of thing, and I think a significant part of that is attributable to changes in the prevalence of smoking. I quite agree with that.

And my suspicion, and this is just at this point in time suspicion in the way I'm looking at it, is that a large part of the rest may be attributable to reductions in cardiovascular disease in the United Kingdom, which have been very sharp in recent decades. And I think that might affect a coincidence of some factors such as changes in the fashion, for want of a better word, for healthy lifestyle, possible policy changes, changes in funding restrictions, and the National Health Service may have delayed the introduction of treatments in the United Kingdom, which may have become established earlier than in the United States.

So I think if I can understand the reason for the cohort effect, you can get a better view as to the extent to which it should be projected. So, for example, the extent that is due to changes in the

prevalence of smoking: people can't give up smoking again. They've already done it, and it's not going to be a significant forward driver in my view. So I do think understanding the causes for these cohort effects is very important, and I'd just like to encourage you to pursue that line of inquiry.

MR. OSTASZEWSKI: A comment to the comment. We agree. Although we were concerned when we started this research that there has not been any official definition, that was part of our purpose. But if those cohorts are not correlated among countries—and we're not finding that right now, although we're working on this—then that makes it even more difficult, because it may be significantly different in various countries. But at this point we don't see any significant correlation among countries. In fact, the results are maybe somewhat bad, although good in a sense.

Based on the numbers that we've seen, yes, there may be a cohort effect in Britain that is troubling, but if everybody knows about it, maybe there has already been a change in the behavior. But otherwise it doesn't seem to be that large of a factor in the functioning of the economy and financial system—at least that's our impression at this point. Understanding the causes would be very good; however, if they're different in various countries, that makes it more difficult.

MR. KENNETH FAIG: The first question is for Krzysztof Ostaszewski and then a question for all the panelists. The question for Professor Ostaszewski: did you attempt to study at all antiselect cohorts? And my question for the panelists as a whole is if we move from looking at the pricing of individual instruments like annuities related to birth cohort year to designing social insurance payments based solely on birth year cohort, what are the implications there? Are we essentially taking fertility rate out of the equation in terms of the cost of the social insurance programs?

MR. OSTASZEWSKI: I'll try to quickly comment on the second question first. I don't think we really are taking out fertility rates and population growth. We worried whether this new factor that there may be validity and longevity of generations is significant, and it probably isn't, from what we see, as much. At least in the United States it doesn't seem to be as much as declining fertility rates and declining growth of population. And that may be a good thing, that we don't have to worry about this factor that much. But we haven't specifically looked for bad cohorts. But, of course, the methodology is the same, so we could rerun all of our spreadsheets and all of our programs that we wrote, looking the other way, looking for those who are below, say, the twentieth percentile. That's not difficult. But we haven't specifically looked for bad cohorts.

For pricing of life annuities, this is a very good and important question, but I'm not sure. Is it a good thing to advertise? If you were born in 1961, you'll get a higher retirement benefit with us: that would be the implication. I'm not a lawyer, so I have no idea whether there are any legal implications with that. But the methodology would be basically the same. We just haven't paid

that much attention because we haven't observed anybody else paying attention to this. But it's true: for practical pricing purposes this may work.

MS. LIJIA GUO: My study basically focuses on the individual annuities, but I will see. It will have a huge impact if we go forward with the Social Security privatization.

MR. ANDREWS: With respect to social security systems that are of the defined benefit type, I don't think that the birth cohorts will be a significant factor because you're averaging across all of the age groups. Certainly the ones in the select birth cohort may benefit, but there will be sufficient members in the other groups who we hope will pay the cost. But if you go to a system of individual accounts, then birth cohorts would become a significant factor, and one would think that those who were in the select birth cohort will find that they have to make do with less. So, yes, it would be an issue.

MR. J. BRUCE MACDONALD: I agree with what Doug has said. I don't think we are going to be taking fertility out of the cost of social insurance plans. The fertility is most interesting. We're trying to put together a panel on this for the Annual Meeting of the Society of Actuaries and examine why fertility in the United States is so much higher than in Canada or in Europe. It's a fascinating subject, and we don't have any answers yet.

MS. GUO: I suspect it might have something to do with immigration.