SOCIETY OF ACTUARIES

Article from:

Risks & Rewards

August 2014 – Issue 64

Risks & Rewards

Actuaries
Risk is Opportunity.®

ISSUE 64 AUGUST 2014

THE USE OF ANNUITIES IN AN OPTIMAL RETIREMENT PORTFOLIO

By Don Ezra

I've reached three major conclusions: on longevity risk, on annuities, and on what an optimal investment portfolio looks like for us.

My thinking is based on the situation that my wife and I are in. And I have to express my proposed solutions in a way that my non-financial wife, and our two non-financial children, can understand. Along the way, I've discovered that our situation is very common, and that other non-financial people appreciate my explanations.

Here's the base situation. We've accumulated an above-average amount of wealth. But the lifestyle we desire is richer than we are. How do I know this? By the simple device of calculating our personal funded ratio.

As a first approximation, I estimate the present value of our lifestyle, after subtracting the income we'll receive from universal plans, and ignoring bequests because we've included in our lifestyle the cost of premiums toward a second-to-die life insurance policy. I use an inflation-indexed joint and two-thirds survivor annuity factor. Call the result our ambition.

I look at the ratio of our assets to our ambition. This is our personal funded ratio, the counterpart to the funded ratio of a defined-benefit plan; though more accurately it's the exact counterpart to the funded ratio of a Dutch-type collective defined-contribution plan, in which the ambition is not guaranteed.

For us, as for so many people, this is below 100 percent. That means we have three dials we can turn.

We can reduce our ambition. I can tell you that, of the three choices, that one ranks third! We can add to our assets—which I'm doing by continuing to work after I have formally graduated from full-time work. And we can take some risk. The typical form is seeking growth via equity

I LOOK AT THE RATIO OF OUR ASSETS TO OUR AMBITION.

exposure, which means we can't buy a standard lifetime income annuity.

But if we don't buy the annuity that's implicit in the calculation of our ambition, we also have longevity risk.

I'm an actuary by qualification, and I've spent my life in the investment field. In investments I'm familiar with uncertain returns and ways of attempting to quantify them. Far less work has been done on quantifying the financial impact of longevity uncertainty. So there was no obvious answer, when I asked myself (and others) the obvious question: Which is greater, equity risk or longevity risk?

Investment risk can be expressed as being equivalent to drawing a single outcome from a distribution of possibilities. Longevity risk can also be represented as drawing a single outcome from a distribution of possibilities. I start to compare them by doing a thought experiment.

Consider two hypothetical worlds. In the first world, longevity is fixed (everyone lives exactly to the average age) and returns are variable. In the second world, returns are fixed (everyone gets exactly the average return) and life spans are variable, so the present values of the amount you need for a given life span are also variable. Both these worlds give rise to distributions of dollar outcomes. But which one has the wider distribution?

To measure the width, I use the "coefficient of variation," that is, the standard deviation divided by the mean. Essentially, this answers the question: For each unit of average reward, how uncertain is the outcome?

I wrote this up in an article titled "How Should Retirees Manage Investment and Longevity Risk in a Defined Contribution World?" for the Rotman International Journal of Pension Management in 2011, so here I'll just give you an outline of the process and the results.

I originally did the calculations in the world as it existed before financial repression. So I was using a 6 percent interest rate, and a 9 percent expected equity return, with bond and equity standard deviations of 8 percent and 16 percent, respectively. I used the American RP2000 life tables for healthy annuitants, in which the male life expectancy at age 60 is 22 years and at age 75 is something much shorter—closer to 10 years.

Results: Consider the 60-year-old male. Using a 22-year period, with Monte Carlo simulation, the mean accumulation of investing $1 in bonds is $3.65, with a standard deviation of $1.37. So the coefficient of variation for bond accumulation is 0.38.

The mean value of a lifetime income annuity of $1 a year for the 60-year-old male is $11.20, with a standard deviation of $3.14. That comes from seeing what proportion die in the first year and so only need to provide for six months of income, how many die in the second year and need 18 months of income, and so on. I used a pure annuity value, with a bond 6 percent discount rate and no loadings. So the coefficient of variation for annuity provision is 0.28—much lower than the uncertainty of outcomes of investing 100 percent in bonds.

Now consider the 75-year-old male. Adjust the projection period downwards, to reflect the lower life expectancy. Now the coefficient of variation for providing the lifetime income annuity rises to 0.46.

Why is that? Obviously, the cost of an annuity is much smaller at age 75 than at age 60. If you look at the numbers, the standard deviation is also smaller. But the standard deviation doesn't decline as much as the expected value. This reflects the fact that the l(x) curve flattens out, even while it shortens.

So the impact of the longevity uncertainty hasn't come down by as much as the life expectancy. And in fact the

THERE COMES A TIME WHEN LONGEVITY RISK DOMINATES EQUITY RISK.

coefficient of variation is now greater than that of the accumulation that results from 100 percent investing in equities over the appropriate time period.

Conclusion: At age 60, longevity uncertainty has less of an impact than investing solely in bonds—so that's a risk I'm happy to take. Sometime before age 75, longevity uncertainty starts to have a greater financial impact than investing 100 percent in equities. Now that's a risk I'm not prepared to take. And therefore it's clear to me that taking longevity risk isn't something I should contemplate either.

(There are a couple of aspects of the calculations themselves that bother me. One is that, given the skewness of the distributions involved, the standard deviation is probably too simplistic a measure of risk. The other may be even more serious. It's that I used accumulation outcomes for the investment distributions, but I used present value outcomes for the annuity distributions. My instinct is that using present values compresses the distribution. If so, longevity risk is larger, compared with investment risk, than my numbers indicate. I'd love the profession's thoughts on those aspects.)

So for me, and almost certainly for most people, there comes a time when longevity risk dominates equity risk, and therefore I should find it too risky NOT to buy longevity protection sometime in the near future.

But I don't think an immediate lifetime income annuity is the best solution, even though that's how the present value of our ambition is calculated. I think insurance, or risk pooling, is indicated where the probability of an event is low, but its financial impact is high. As far as longevity is concerned, a low probability surely means lower than 50 percent. And therefore I don't want to pay for anything that occurs before my current life expectancy runs out. In practical terms, for my wife and me this means something that kicks in at my age 85.

So, what I want is a deferred lifetime income annuity that kicks in around my age 85, and continues for as long as either my wife or I hang around. That's longevity insurance, for me.

I recognize that there are many aspects of defining the ideal annuity that I haven't addressed. Let me deal briefly with two of them.

The first has to do with the price of the annuity.

It's possible that the price of the annuity becomes more than I want to pay. In other words, the loadings become more than the value of risk pooling. Here's how I illustrated the calculation some years ago.

At the time, our joint-and-last-survivor expectancy was 29 years. Looking at the RP 2000 tables for couples of our age, 5 percent of them would have at least one partner still alive after 41 years. Since an annuity value at a 0 percent interest rate is the same as the life expectancy, in an era of financial repression, the ratio of 41 years to 29 years, or a bit more than 140 percent, is also the relative value of the two annuities.

In other words, whatever it would cost us to set aside for 29 years, we would have to set aside 40 percent more than that, to make it last for 41 years (assuming a drawdown fixed in real terms, and therefore the legitimacy of a 0 percent real interest rate). And even then there's a 5 percent chance that we would outlive our savings. So, as far as a joint-and-last-survivor annuity is concerned, it would still have some appeal if the money's worth of the annuity is at least 100/140, or about 70 percent, if we feel that the chance of default by the insurance company is less than 5 percent.

The second aspect is whether it's possible to get longevity protection in a different form. And it is. Possibly the best example of a different form is the guaranteed minimum withdrawal benefit (GMWB) policy, or guaranteed lifetime withdrawal benefit (GLWB), or whatever other name it may be given. This too guarantees an income for life. And

it has the combined advantage and disadvantage of coming with an investment policy attached.

The advantage is that it becomes possible, in one contract, for people like us, who are less than 100 percent funded for their ambition, to take some risk with their investments and still retain ownership of the assets.

I see some disadvantages too. One is that I'd rather customize the risk policy myself. Another is that I'm paying more than I want for active management of assets, of a sort I probably don't want. A third is that pricing is opaque. There's active management, longevity insurance and various kinds of investment optionality built in, and if I can't see the pricing, I won't buy it if there's an alternative form of protection available.

The full title of my Investment Symposium presentation (Session R2, "The Use of Life Annuities in an Optimal Retirement Portfolio") includes the phrase "an optimal retirement portfolio." So let me tell you how we think of that, because I'm told it has a very unusual feature.

We have three goals. The first goal is longevity protection. How long will we live? We don't know. And therefore we need to insure against outliving our assets. We could plan to live to 100 or 120, but that's a very expensive way to get longevity insurance. I know many advisers use that approach. I think it shortchanges their clients, who have to turn down the spending dial unnecessarily.

We need growth. Like so many retirees, even though in absolute terms we might be considered rich, our lifestyle is richer than we are. With low-risk investments, our personal funded ratio is below 100 percent. We are willing to take some risk.

But we want safety too. Like most retirees, we're very risk-averse. To be told, in 2009: "Last year was a bad year; this year you have to turn your spending dial down," would have shocked us. We need at least some notice of that kind of thing.

So here are our three instruments.

For longevity protection, for us the ideal instrument is a deferred income annuity that kicks in if one or both of us survive until my 85th birthday. Then the rest of our assets only have to last until age 85.

For growth, equity-type investments are the obvious approach—lots of different kinds.

And for safety, what works for us is to have five years of spending guaranteed via government bonds and TIPS (or real return bonds, as they're called in Canada), structured to mature regularly over the next five years. If we can afford it, we might protect our essential spending even longer.

The reason this works for us is as follows.

First, that takes care of our uncertain longevity. (I'm over-simplifying, I know.)

Second, we always have at least five years of being able to see what happens to the markets before we have to turn

down the spending dial. Yes, we're always at risk over the long term. But not over the short term.

In the five years of safety, we re-evaluate our funded position and see where we think the markets are. Right now we're happy to extend our five-year ladder of safety. In 2009 we wouldn't have been; we'd have chosen to wait, hoping for a recovery. If there hadn't been a recovery, we'd have turned the spending dial down eventually. But we'd have had five years to prepare for it. And as it happens, that would have been enough.

My point is that equities are very risky in the short term. Over the longer term (and there's no magic in choosing five years), yes, they're still risky, but we have time to prepare. We can consider, each year, as we review our funded ratio, how much of our nice-to-have spending is at risk, and which bits are the first to be jettisoned.

And that makes for a much calmer, much less panicky, assessment—even though our equity exposure is about 70 percent, which most people think is insanely high for a retiree. Not for us. For the average retiree, fixed income reduces each year's volatility, and even 50 percent fixed income still leaves a volatile portfolio. For us, fixed income has a different mission statement: buy us five years of time, so we're not troubled by annual volatility. And roughly 30 percent is enough for that.

All of this allows us to remember how lucky we are in the rest of our life abundance portfolio—a concept created by the well-known business coach and author Edward A. Jacobson. I'm using my words now, rather than his; but after listening to Ed, I think of our life abundance portfolio as having seven asset classes: family and friends, work and play, mental health and physical health—and, oh yes, finances. There's more to life than just money, even though that's what we all tend to think about, and get paid to think about.

Jacobson's concept has really changed our perspectives, mine in particular, because until we started thinking this way, as a geek all I thought about was numbers. Now I focus on how lucky and how happy we are. 💰

Don Ezra is a widely published author. In addition to numerous articles and papers, his books include Pension Fund Excellence and The Retirement Plan Solution: The Reinvention of Defined Contribution. Among many awards, he received the Lillywhite Award from the U.S. Employee Benefit Research Institute in 2004 for "extraordinary lifetime contributions to Americans' economic security."

He "graduated" from full-time work almost four years ago. In his post-graduate career, Don is now a member of the investment committee of two American charitable foundations, and continues to act as global director emeritus, investment strategy, for Russell Investments, 30 years after starting Russell's Canadian office and serving Russell in senior positions in Canada, the U.S. and the U.K. Though he hasn't practiced as an actuary for decades, he still maintains his fellowship of the U.K. Institute and Faculty of Actuaries.