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Using Sound Actuarial Principles to Better Manage Retirement Finances

By Ken Steiner

This article briefly discusses advice currently being given to retirees on how to manage their finances in retirement and how the use of sound actuarial principles to develop a reasonable spending budget can improve that advice. It also discusses the potential benefits to retirees, financial advisors and the actuarial profession of using such principles or encouraging their use.

BACKGROUND

With the retirement of the baby boom generation and decline of defined benefit (DB) pension plans, there is considerable interest these days in managing personal finances, both at and during retirement. Individuals who are considering retirement wonder if they have enough resources to afford it, and individuals who have already retired wonder if they have enough resources to meet their ongoing financial needs for the duration of their retirement, however long that may be.

There is no shortage of advice on this subject from experts in the financial press and on the Internet. Unfortunately, most of this advice is aimed at the average individual who wants a quick and easy answer. Thus, we see a lot of what I call Rule-of-Thumb (RoT) recommendations to "tap your savings." Perhaps the most famous of these RoT recommendations is the 4 percent rule, by which the individual withdraws 4 percent of his or her accumulated savings in the first year of retirement and increases that initial withdrawal by the increase in inflation in each subsequent year until the earlier of one of three events: (1) the date the retiree runs out of accumulated savings, (2) the retiree dies, or (3) the retiree decides not to follow the 4 percent rule any longer (at which time, the advice becomes less clear). Many experts recommend variations of the 4 percent rule. These static "safe withdrawal" variations include using a lower safe withdrawal rate to reflect lower-than-historical economic expectations, using a higher safe withdrawal rate that is adjusted under certain circumstances, and simply increasing the amounts of withdrawals under the 4 percent rule when the retiree determines that not enough assets have been spent. There are also other "dynamic" RoT approaches that apply various percentages to the retiree's current accumulated savings. The most well-known of these withdrawal strategies is the required minimum distribu-

tion (RMD) approach. And, of course, there is the ever-popular "spend the investment return" approach that anticipates that the retiree will not dip into his or her principal.

Sometimes a financial expert will recommend that the retiree set aside assets for unexpected expenses or for future long-term care expenses. Other experts will recommend that the retiree separately consider essential spending and nonessential (or discretionary) spending. How this is accomplished with an RoT approach is not always clear.

To develop a spending budget with one of these RoT approaches, you generally add the withdrawal from accumulated savings under the approach being used to income you may receive during the year from other sources, such as Social Security, pensions, annuities and so on. Thus, the existence of these other sources of income will generally have no impact on the x percent withdrawn from accumulated savings under the RoT method.

In a November 2014 survey of financial advisors by Russell Investments, 234 participants were asked how they develop spending budgets for their clients near or in retirement. Twenty-five percent responded that they based their approach on levels of pre-retirement spending, 22 percent indicated that they used a rule of thumb like the 4 percent rule, 19 percent said they used some variation of the bucket strategy,[1] 16 percent said they compared assets with future liabilities, and 18 percent indicated some other approach.

The Russell Investments survey concluded that not enough financial advisors were using "math and science to develop spending budgets for their clients and should be periodically comparing the client's assets with the client's liability (the present value of the future withdrawals from the accumulated assets) similar to how actuaries measure the funded status of pension plans." This was a clear shout-out to the actuarial profession to step up its game and become part of the solution.

USING SOUND ACTUARIAL PRINCIPLES TO DEVELOP A RETIREMENT SPENDING BUDGET

The problem of how much to spend each year in retirement is an actuarial problem that requires an actuarial solution. Fortunately, we can apply the same actuarial principles used for pension plan funding and measuring Social Security actuarial balances to this problem. The basic equation for this purpose is:

> Market value of assets + Present value of future income from all sources = Present value of future budgets + Present value of amounts to be left at death (Eq. 1)

This is the classic actuarial balance equation, where assets are equal to the items on the left-hand side of the equation, and liabilities are equal to the items on the right-hand side. If this is beginning to look to you pension actuaries like I am going to

recommend an annual (or periodic) actuarial valuation of assets and liabilities to solve for a current year's budget, you're with me. This equation tells us that the present value of the retiree's current and future spending is a function of his or her current assets.

At retirement, and at least once a year thereafter, the retiree (with possible help from a financial advisor or qualified actuary/financial advisor) is going to select reasonable assumptions for a discount rate, a rate of future inflation, mortality (or expected period of retirement) and other relevant elements. Once these assumptions have been selected, the present value of future income from all sources is calculated and added to the retiree's current assets. The retiree decides how much of a bequest motive he or she wants to have and subtracts the present value of this desired bequest motive from his or her total assets (current assets plus present value of future income). The result is the present value of current and future budgets.

The next step in the budget-solving process is to determine the desired pattern of future budgets. For example, the retiree may decide that future budgets should increase each year with inflation. Once the pattern of future budgets has been determined, the current year's actuarially determined budget can be determined.

Many retirees are going to want a more refined spending budget than one determined with a single assumption about future year's budget increases. For example, the retiree may have different expectations or desires about future increases applicable to health care costs, essential expenses, nonessential expenses and so forth. In this case, the right-hand side of Equation 1 becomes:

> Present value of future expense type #1 budgets + Present value of future expense type #2 budgets + Present value of future expense type #3 budgets (etc.) + Present value of amounts to be left at death (Eq. 2)

Some retirees may find it beneficial to dedicate certain assets to fund specific types of expenses. Certainly, fertile actuarial minds can find a way to improve, refine or otherwise complicate the simple formulas set forth here.

EXAMPLES

Let's illustrate the Equation 1 calculations for two retirees and compare the resulting budgets and expected first-year withdrawals from accumulated savings with results developed under the 4 percent rule. We will assume each of our example retirees is age 65, single and receiving a Social Security benefit of $18,000 per annum. We will further assume zero bequest motive, a 30-year retirement period, a 4.5 percent discount rate and 2.5 percent inflation. Both retirees are assumed to have $300,000 in accumulated savings. Example Retiree #1 also has a fixed dollar,

immediate single life annuity of $25,000 per year, and Example Retiree #2 has a fixed dollar, deferred annuity of $25,000 per year payable commencing at age 75, with no death benefits either before or after commencement. For calculation simplicity, all present values assume beginning-of-year annual payments. Both retirees develop their spending budgets for the first year of their retirement by deciding that their future spending budgets should increase each year with expected inflation.

Example Retiree #1's assets under these assumptions are $1,139,319. This is the total of her accumulated savings of $300,000, the present value of her Social Security benefits of $413,772 and the present value of her single life annuity benefits of $425,547. To determine her spending budget for her first year of retirement, we divide her total assets by the present value of an increasing 30-year certain annuity due factor of 22.98736 to produce a total first-year spending budget of $49,563. Assuming she spends exactly her budget and all of her Social Security and life annuity benefits, she will withdraw $6,563 ($49,563 – $18,000 – $25,000) from her accumulated savings this year. This withdrawal is equal to about 2.19 percent of her accumulated savings. By comparison, if she had used the 4 percent rule, she would withdraw $12,000 (4 percent) from her accumulated savings, and if she planned on spending her life annuity and Social Security benefits, her spending budget would total $55,000.

If all assumptions are realized in the future, Retiree #1's spending budget (developed using basic actuarial principles) is expected to remain constant in real dollars over her expected period of retirement, while her spending budget (developed using the

4 percent rule) is expected to constantly decrease in real dollars over her expected period of retirement.

Example Retiree #2's assets under the outlined assumptions are $932,599. This is the total of his accumulated savings of $300,000, the present value of his Social Security benefits of $413,772 and the present value of his deferred annuity benefits of $218,827. Dividing this amount by 22.98736, we develop a first-year spending budget of $40,570, and Example Retiree #2's withdrawal from accumulated savings this year is $22,570 ($40,570 – $18,000), or about 7.52 percent of his accumulated savings. By comparison, if he had used the 4 percent rule, he would withdraw $12,000, and his total spending budget would be $30,000.

If all assumptions are realized in the future, Retiree #2's spending budget (developed using basic actuarial principles) is expected to remain constant in real dollars over his expected period of retirement, while his spending budget (developed using the 4 percent rule) is expected to significantly increase at age 75 when the deferred annuity benefits commence.

These simple examples illustrate the advantage of using basic actuarial principles rather than an RoT to determine a retiree's budget in accordance with the retiree's spending objectives. As discussed in the section that follows, there are also advantages to using the annual valuation process to redetermine the spending budget each year.

BENEFITS TO RETIREES AND THEIR FINANCIAL ADVISORS OF USING AN ACTUARIAL APPROACH

Yes, the actuarial approach already outlined is more complicated than using an RoT approach, but here are some of the benefits to the retiree and the retiree's financial advisor of using the actuarial approach:

- It adjusts the retiree's spending budget to remain on track through various economic environments.
- It enables a person considering retirement to see whether he or she is financially ready to retire.
- It permits the financial advisor to help the client strategize alternative approaches if desired spending exceeds the actuarially determined spending budget.
- It helps the client develop a plan for managing the difference between desired and actuarially determined spending levels.
- It permits the financial advisor to measure the implications of alternative investment approaches based on client circumstances and objectives.
- It coordinates income from other sources such as fixed dollar pensions, immediate annuities, deferred income annuities and deferred Social Security benefits better than most RoT approaches.

BENEFITS TO THE ACTUARIAL PROFESSION AND MEMBERS OF ENCOURAGING THE USE OF AN ACTUARIAL APPROACH

Applying actuarial principles to retirement spending plans may create opportunities for actuaries who are also qualified financial advisors. It is entirely consistent with many of the goals expressed in the mission statements of both the Society of Actuaries and the American Academy of Actuaries, including:

- Address pressing issues that require or would benefit by the sound application of actuarial principles
- Have actuaries recognized as preeminent experts in risk and financial security
- Serve the public and the U.S. actuarial profession
- Identify and address issues on behalf of the public interest on matters in which actuarial science provides a unique understanding
- Increase the public's understanding and recognition of the value of the actuarial profession
- Provide basic education in the fundamental principles of actuarial science
- Improve decision making to benefit society
- Enhance the ability of actuaries to be trusted financial and business advisors on problems involving uncertain future events

CONCLUSION

The public deserves better advice on managing spending in retirement. The answer to this problem lies in the application of sound actuarial principles to develop a reasonable spending budget. The profession and its members should encourage the application of basic actuarial concepts for this purpose.

Ken Steiner, FSA, is passionate about this issue and has been blogging on this subject since he retired in 2010. If you like what you have read in this article, you can find a lot more of his writing (as well as examples and calculation spreadsheets) at the following blogsite: http://howmuchcaniaffordtospendinretirement.blogspot.com/. ■
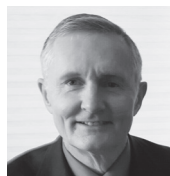
Ken Steiner, FSA, is a retired actuary. He can be reached at *kasteiner49@aol.com*.

ENDNOTE

[1] See the following link for a description of a bucket strategy: *http://www.bankrate.com/finance/retirement/retirement-income-strategy-using-buckets.aspx-?ic_id=outb_27769452*. My 2014 blog response to it can be found here: *http://howmuchcaniaffordtospendinretirement.blogspot.com/2014/08/the-actuarial-approach-vs-bucket-system.html*.