

Self-Insuring Your Retirement? Manage the Risks Involved Like an Actuary

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Determining how much you can spend each year

A financially successful retirement requires planning for two phases: saving and spending. While several useful Internet tools can help you figure out how much to save for retirement, there are few tools for managing your spending once you get there. This article sets out a relatively simple process to help you determine how much of your available retirement resources you can spend each year, which we call your “annual spendable amount.”

As employers have switched from traditional defined benefit (DB) plans—which generally pay out benefits in a lifetime income option—to 401(k) and other account-based plans—which typically pay out only lump sums—more people face important choices respecting how best to use their accumulated savings to replace their pre-retirement income:

- Use the 401(k) balance or other accumulated savings to purchase a life annuity (or other lifetime income insurance product) from an insurance company
- Self-insure their retirement—invest accumulated savings (including lump sums payable from DB plans) and withdraw a prudent amount annually, or
- Use some of the available accumulated savings to purchase a life annuity and self-insure with the remaining savings (partial self-insuring).

In this article, references to self-insuring also include partial self-insuring.

Self-insuring offers several advantages, including greater liquidity, more flexibility, the potential for a higher income and the possibility of leaving an inheritance. The disadvantages include a risk of running out of money and a less predictable, and possibly lower, annual income. But using the actuarial process described below—along with reasonable assumptions—can help you better manage these financial risks.

The overwhelming majority of people choose to self-insure their own retirement rather than buy a life annuity. Given a choice between a lump sum and a life annuity with the same expected value, most DB plan participants opt for the lump sum. This article does not attempt to answer the question of which of the three options above is best, but rather to suggest a rational spending approach for those who do not use all of their accumulated savings to purchase lifetime income insurance products.

Self-insuring vs. annuitizing: A risk comparison

So you have retired or are about to. How will you replace your salary? You might be eligible for Social Security, a lifetime income option from a DB plan and/or a lifetime income insurance produce, but we assume you will also be relying on your accumulated assets (Individual Retirement Accounts and investments in various stocks, bonds or mutual funds) to supplement these sources.

Self-insuring your retirement means assuming responsibility for investing your assets, perhaps for the rest of your life (investment risk). If your investments fall short, you could run out of money or need to scale back. If your investments outperform your expectations, you'll be in much better financial shape (unless you're worried about leaving too much money to your heirs).

Choosing to self-insure also entails longevity risk, meaning that your retirement assets need to last as long as you (or your significant other) do. While most of us hope for a long life, greater longevity requires more financial resources. Women tend to live longer than men, so they generally pay higher premiums for lifetime income products than their same-age male counterparts. (Qualified retirement plans that offer a choice between lifetime income and a lump sum cannot differentiate based on gender.)

Most people prefer their retirement income to be steady rather than feast and famine. But if you self-insure, your annual income might vary along with the market and other conditions. We'll call this income volatility risk.

Your withdrawal strategy might be too optimistic or too pessimistic. For example, you might decide it would be fun to spend your retirement money on a boat. Not purchasing a lifetime income insurance product (or choosing the lump sum option from a DB plan) gives you more flexibility, but it also offers more opportunities to exercise bad, or at least financially unsound, judgment. Being overly cautious can cause problems as well. Retirees who worry about outliving their retirement assets often spend too little, denying themselves an enjoyable retirement. We'll call the risk of taking out too much or too little each year withdrawal strategy risk.

Lifetime income insurance products can essentially eliminate all of these risks. Of course, an insurance company (or pension plan sponsor) could go out of business and fail to honor its annuity promises. While such defaults are extremely rare, they can happen. In those unhappy circumstances, your lifetime income insurance product may be fully or partially protected by state insurance guarantee agencies (or the Pension Benefit Guaranty Corporation).

Finally, almost all retirees are subject to inflation risk. Social Security payments generally keep pace with inflation. Most lifetime income insurance products do not, although some life insurance companies offer life annuities with payouts that increase from year to year. If you self-insure, you will need to consider how future inflation will affect your spendable income needs.

Become your own actuary

Professional actuaries help life insurance companies, businesses and other organizations manage risks, including those described above. Actuaries must pass many exams, and it typically takes seven to 10 years to become a Fellow of the Society of Actuaries (FSA), the generally recognized credentialing body for North American actuaries. Life insurance companies depend on actuaries to determine how to price life insurance products, including life annuities. Defined benefit plan sponsors rely on actuaries to measure the value of their pension promises and how much they need to contribute to properly fund these plans.

If you decide to self-insure your retirement income, whether you consciously think about it or not, you'll need to perform many actuarial functions (or hire someone else to do it). Luckily, you won't need to study and pass a lot of pension actuarial exams to successfully manage the

risks associated with self-insuring; you'll just need to think more "actuarially." To do this, you will need to follow the General Actuarial Process described below.

The General Actuarial Process

The process involves five steps:

- 1) Gather relevant data as of a measurement date.
- 2) Make assumptions about relevant future experience.
- 3) Apply algorithms (calculation methods) and assumptions to determine outcomes (in this case, the amount you can spend in a year).
- 4) Store outcomes of the calculations in Step 3 for future use.
- 5) Repeat the process periodically to compare actual experience with your projections, and then apply algorithms to make any necessary adjustments. This is the most important step in the General Actuarial Process, as it automatically adjusts your spendable income to reflect actual experience.

This process, as it applies to self-insuring one's retirement, is described in more detail below.

Step 1—Data. You need the following information on hand: 1) your accumulated savings, 2) how those assets are or will be invested, 3) your health status (and that of your spouse or significant other), 4) the amount of lifetime income you will receive from sources other than Social Security (assumed to be a fixed amount each year) and 5) the amount you wish to leave to your heirs.

Step 2—Assumptions. Next, you need to make assumptions about the rate of return your assets will earn. This assumption can be either before or after taxes. If your assumption does not include taxes on the investment income, any applicable taxes must be paid from your annual spendable income. This assumption might vary for different classes of assets in which case an average for your total portfolio should be used. Your investment return assumption is also generally coordinated with your assumption for future inflation, as discussed below.

Some actuaries believe that assumed investment returns should approximate a risk-free interest rate, as the higher expected returns associated with riskier assets, such as equities, also carry a higher risk of volatility, meaning the returns might vary significantly over time. Therefore, assuming a risk-free interest rate for all asset classes is more conservative and automatically adjusts for the extra risk inherent in investing in riskier assets with higher expected returns.

You also need to make an assumption about longevity. How long will you (and/or your significant other) need these payments? Many internet calculators will estimate your life expectancy (in number of future years). If you use a calculator that gives you an expected age at death, subtract your current age from that age to calculate your life expectancy.

Some of the sites ask about your health or your family history. If you have a life partner, you might want to input the longer of your two life expectancies. As mentioned earlier, women are expected to outlive men the same age. You might also wish to anticipate improvements in current mortality—or play it safe—by adding a few years to the preliminary result. Life

expectancies are based on average mortality experience, but people can and do outlive their life expectancy. In fact, if you experience average mortality, you have about a 50% probability of outliving your life expectancy based on standard mortality tables. If you are close to age 65, for example, you can reduce the probability of outliving your life expectancy to about 25% by adding roughly six years to your life expectancy assumption. To attain an even higher probability of not outliving your income, you should assume you will live into your early to mid 90s.

Generally, you will want to make sure your retirement income keeps up with rising inflation. Your assumption about future inflation should be consistent with your assumed future investment return, or you can simply plan on a given level of increase each year. Typically, you might assume inflation will be a lower percentage increase than your assumed investment return (with the difference considered your “real” investment return assumption). If you receive some part of your retirement income in the form of a non-increasing life annuity, you will need to fund future cost-of-living increases on this source of retirement income through your accumulated savings.

Step 3—Actuarial calculations. Once you have gathered your data and assumptions, you’re a few calculations away from knowing how much you can spend each year. This website provides a simple tool for this step. More sophisticated tools might be available on the Internet or elsewhere, which you (or your financial planner) should feel free to use, either to figure out an annual spendable amount or to verify the results obtained with this simple tool. However, the tool you use is generally less important than making reasonable assumptions and following the General Actuarial Process during your retirement years. Inserted March 10, 2011: See related link to Analyzenow.com for a more sophisticated tool for this purpose.

Inserted September, 2012: The simple tool discussed below has been updated (version 2.0) to permit input of deferred lifetime insurance amounts so that the withdrawal strategy can be adjusted to reflect such income. The discussion and examples that follow have not been changed to reflect this update to version 2.0, but the basic concepts are still unchanged.

Simple tool for determining annual spendable income (excluding Social Security)

The simple retirement budgeting tool (V1.0) requires six inputs to calculate your annual spendable income: 1) your accumulated savings, 2) your life expectancy, 3) the assumed rate of return on your savings, 4) the assumed rate of increase in the spendable income amount for future years, 5) lifetime income from other sources (assumed to be a constant amount each year) and 6) the amount you want to leave to your heirs (in future dollars). All these items are discussed below. To arrive at a reasonable estimate of the amount you can spend each year in retirement, these inputs should be as accurate as possible.

| A | B |
|---|------------------|
| How Much of My Accumulated Savings Can I Spend This Year? | |
| INPUTS | |
| Enter the following information at the beginning of the year : | |
| Accumulated Savings : | \$800,000 |
| Life Annuity Amount | \$10,000 |
| Expected annual rate of return on savings : <i>e.g. five percent should be input as .05</i> | 5.00% |
| Life expectancy in years: | 27 |
| Annual desired increase in payments: <i>(e.g. Three percent should be input as .03)</i> | 4.00% |
| Desired amount of savings remaining at death : | \$100,000 |
| RESULTS: | |
| Spendable income for the year (total life annuity and savings) : | \$38,772 |
| Spendable income for the year (from accumulated savings ONLY) : | \$28,772 |
| Expected accumulated savings at year end: | \$809,789 |
| Expected spendable income for next year (total life annuity and savings): | \$40,323 |
| Expected spendable income for next year (from accumulated savings only): | \$30,323 |

Accumulated savings. This is the amount of your income-generating assets. Generally, this does not include the value of your home. All else being equal, the higher your accumulated savings, the higher your annual spendable income.

Inserted April, 2013 – If you believe that you will eventually have access to some of your home equity (as a result of downsizing to a smaller, less expensive home or apartment, or through a reverse mortgage that will pay you a lump sum or monthly payment while allowing you to remain in your home) and you want to factor the value of this future action in your spending plan, you can include an estimate of the present value of the net equity you expect to

receive in the amount of accumulated savings you input in the spreadsheet. Note that doing so is less conservative than not anticipating such action and could leave you more vulnerable to future financial surprises, such as unanticipated medical or nursing home costs.

Your life expectancy. This assumption is important and requires careful attention. The longer your life expectancy, the less you can spend each year and the more conservative your spending plan must be.

Assumed rate of return on accumulated savings. This is another very important assumption. The higher the assumed rate of return, the more you can plan to spend each year—and the higher the probability that your assumption will overshoot reality. As discussed above, some actuaries believe that a risk-free rate of return should be used for this assumption.

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The rate of increase for your annual spendable income in future years. If you want to get annual “raises” to keep up with inflation or to cover higher expected medical costs, you need to specify an annual increase percentage. The higher the specified rate of future increase, the lower the annual spendable amount.

Lifetime income amounts from other sources. Since we have assumed any lifetime income you will receive from sources other than Social Security will not increase in the future, your accumulated savings will also be used to provide the required increases for the amount you input for this item.

The amount you want to leave your heirs. Remember that this amount represents future dollars, which will generally be worth less than their value today. Obviously, the more money you want to leave your heirs, the less you will have to spend.

After you input this information, the calculation tool figures your total annual spendable income (the total of the fixed dollar life annuity, if any, and the amount payable from accumulated savings). This amount—together with what you receive from Social Security and other inflation-adjusted annuities that you may own—must cover all your expenses, including taxes. It isn't just for discretionary or fun items.

Reasonableness check. To verify that the annual spendable amount is reasonable, you can obtain an immediate annuity quote from an insurance company. To make an apples-to-apples comparison, assume zero future increases (because life annuity products generally do not increase over time), no other lifetime annuities and no inheritance (life annuity products generally don't provide for them). You will need to adjust the comparison if the single premium for the immediate life annuity does not equal the amount of your accumulated savings. If your results are significantly higher or lower than a comparable annuity from an insurance company, you might want to revisit your assumptions.

Step 4. Store results. The tool will calculate your expected accumulated savings at year-end and project next year's total spendable amount (lifetime income plus amount from accumulated savings), which is this year's total spendable amount multiplied by the desired rate of increase. Print out your beginning-of-the-year calculation results and save them for next year (as described in Step 5).

Step 5. Repeat the calculations next year, smoothing as necessary. It is critically important to periodically adjust your results to reflect actual experience. Using the calculation tool only once will not be effective. You should repeat the calculation process at least once a year. You may also wish to develop an algorithm to adjust (or smooth) for differences between assumed and actual experience. For purposes of illustration, I suggest a simple algorithm that averages calculation results over a two-year period, but you and your financial planner might prefer a different smoothing algorithm. The simple averaging approach that follows assumes evaluations are performed at the beginning of each year.

Sample algorithm for smoothing actual year-to-year experience

At the beginning of the first year, you entered the six inputs discussed above and determined a total spendable amount for year one and the expected total spendable income and accumulated savings amounts for year two if all your year-one assumptions pan out. At the beginning of the second year, you should reenter all six inputs based on current information. Some of the data or assumptions you made for first year might have changed over the year.

Your actual year 2 accumulated savings might be somewhat larger or smaller than your expected year 2 amount, depending on investment performance and your actual expenditures. Your life expectancy might be less, but probably not one year less. As we age, our chances of living to an older age rise. You should consult the same source you used the first time for calculating life expectancy and factor in any health changes that could affect this estimate.

Your expectations for investment return could also change. For example, if you are primarily invested in bonds and interest rates have fallen, you should probably reduce your assumed investment return assumption. You might also want to adjust the assumed annual rate of increase in the spendable income amount if, for example, you believe expectations for future inflation have changed, and you may also wish to adjust the inheritance amount.

After doing all that, you have a new total spendable amount for the upcoming year. You can stick with that result, or you can apply an algorithm to smooth variations from year to year. For example, you could average the expected spendable amount for year two (which you developed last year) with the spendable amount you just calculated. You could also use a three-year averaging method rather than averaging over two years. For each subsequent year, you would perform the same process and apply the same smoothing algorithm.

Retirees who prefer to have real dollar stability from year to year, may wish to adopt an algorithm that adjusts the previous year's spendable amount for inflation for the previous twelve months provided that the resulting spendable amount remains within some specified corridor of the spendable amount based on that year's actual accumulated savings and the simple spreadsheet contained in this website. If the inflation adjusted spendable amount fell outside the corridor in any one year, the algorithm could provide, for example, that the adjusted spendable amount would be equal to 50% of the spendable amount based on actual accumulated savings and 50% of the inflation-adjusted spendable amount.

Example

To illustrate how the process and sample algorithm works, let's assume we have a 65-year old woman with accumulated savings of \$800,000 and an immediate life annuity pension of \$10,000 per annum from a DB plan who estimates that she will live until age 92 (27 more years). She assumes she can earn 5% per annum on her investments and she estimates that

inflation will be 4% per annum (So she estimates that she will earn approximately a 1% per annum “real” rate of return). She would like to leave \$100,000 to her heirs when she dies. Therefore, she inputs the following items into the simple spreadsheet for the first year:

1. Accumulated savings: \$800,000
2. Life Expectancy: 27 years
3. Assumed Rate of Return: 5% per annum
4. Assumed increase (inflation): 4%
5. Annual lifetime amount: \$10,000
6. Amount intended to be left to heirs: \$100,000

Inputting these items into the spreadsheet produces a total spendable income amount for year 1 of \$38,772, with \$10,000 from the defined benefit plan and \$28,772 coming from accumulated savings. The expected spendable income amount for year 2 is 4% higher than the total amount, or \$40,323 and the woman’s expected accumulated savings as of the beginning of year 2 is \$809,789 (assuming beginning-of-year withdrawals and assuming she spends exactly the year 1 spendable income amount). The woman records the expected results for year 2 in her retirement budget files to be used next year.

Let’s assume investment return during year 1 exceeded the woman’s expectations and her accumulated savings grows to \$850,000 at the end of year 1. At the beginning of year 2, the woman re-opens her retirement budget file and revisits the spreadsheet. She still believes that she will live until age 92 and she still believes that the assumptions she made in year 1 are reasonable. Therefore, she inputs all the same items into the spreadsheet that she entered for year 1, except this year she enters the new accumulated savings of \$850,000 and she enters a life expectancy of 26 years instead of 27 years. The preliminary year 2 spendable income amount developed from inputting this new information is \$42,062. As discussed above, one simple algorithm to smooth the results from year to year would be to average this preliminary value with the expected value for year 2 (\$40,323) from the previous year’s calculation to obtain the year 2 spendable income amount of \$41,193. Instead of fully recognizing the investment gain she achieved in year 1 immediately, she decides to smooth it and only spend \$41,193 for year 2. Finally, the woman records the expected spendable income amount for year 3 of \$43,744 (the preliminary value for year 2 of \$42,062 increased by 4%) to use when determining the spendable income amount for year 3. At the beginning of each subsequent year, she goes through the same process to determine her spendable income amount for the upcoming year.

What will the General Actuarial Process do for you?

If you decide to self-insure your retirement, I recommend consulting a financial advisor to help you formulate a long-term investment strategy. You should periodically monitor its success (or shortcomings), and adapt your strategy to changing conditions as necessary. A successful investment strategy will certainly go a long way toward making the retirement budgeting process a more pleasant experience. Nothing in this article, however, should be interpreted as recommending or even suggesting any particular investment strategy.

As long as your assumptions are reasonable, the General Actuarial Process can help you avoid running out of your accumulated savings, provided you respect your spending limits and use a smoothing algorithm that keeps you up-to-date with actual experience. Unfortunately, even doing everything right will not necessarily provide a stable income. If you self-insure your retirement, the pattern of your retirement income may not be as stable as you might like and it is still possible to run out of money. To avoid income fluctuations and running out of money, you might want to look to structured bond investments or annuitization. There are no guarantees when you self-insure.

As mentioned earlier, it is good practice to periodically compare your calculated spendable amount (with no assumed cost-of-living increase, no life annuity amount and no inheritance) with the income you could obtain by using your accumulated savings to buy an immediate life annuity. If the amount you arrive at using your calculation tool is significantly larger than the annuity quote, your assumptions could be overly optimistic.

There are many reasons why you might want to spend less than your calculated spendable income amount. For example, medical expenses tend to increase significantly later in life. Also, you might be too optimistic about your future investment returns or too pessimistic about your life expectancy—both resulting in too high a spendable income amount. Or, you might simply want to make sure that your spendable income doesn't decline significantly in the future should your assumptions prove overly optimistic. Thinking as an actuary (we are generally perceived as a pretty conservative bunch), you might want to view the spendable income amount as a limit, not a requirement.

The simple calculation tool described in this article assumes that your goal is to have a reasonably stable pattern of spendable income from year to year measured in inflation-adjusted dollars. The calculation tool would need to be adjusted if, instead, you wanted to use your accumulated savings to provide a different pattern of retirement income. For example, if you have not yet started your Social Security benefits and you wanted to use your accumulated savings to “bridge” your income until you became eligible for Social Security, the same general actuarial process could be used, but the simple calculation tool would need to be adjusted. See the Social Security Bridge spending calculator on this website, which can be used for this purpose by inputting “estimated Social Security benefit” and “years to expected Social Security commencement.”

Inserted September, 2012 – As discussed above, the Excluding Social Security spending calculator has been updated effective September, 2012. In addition to allowing you to input a deferred annuity amount payable in the future, it will also allow you to view (in the inflation-adjusted run out tab) the effect on total real dollar spendable amounts of using either the same or different assumptions for the desired rate of increase in your total spendable amount and general inflation.

Summary

If you decide to self-insure your retirement, you can enhance your financial security by following the same principles actuaries employ to help pension plan sponsors meet their pension promises. You can skip the pension actuarial exams and nights at the Holiday Inn Express --but you should follow the general process used by actuaries when providing professional services. This process can help you manage the risks involved in self-insuring your retirement and avoid outliving your savings. You can use any number of calculation tools

to determine spendable income, as well as different approaches to smooth actual experience as it emerges. This article suggests a simple calculation tool and smoothing algorithm that works with the General Actuarial Process if you desire to have relatively stable retirement income from year to year measured in inflation-adjusted dollars, but other calculation tools or smoothing algorithms may be equally or more effective.

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As discussed in the March 2010 article contained in this website, there are many risks associated with self-insuring your own retirement. The general process described in the article and sample spending calculators in this website are made available to you as self-help tools for your independent use and are not intended to provide investment or financial advice. As with all planning tools, the reasonableness of the results (in this case, your "annual spendable amount") is a function of the accuracy of the data and assumptions that you input. Since you control these items as well as investment of your accumulated savings, we can make no claims or guarantees that you will not outlive your accumulated savings or experience significant decreases in amounts that may be spent in a future year if you follow the process described in this website. We assume no responsibility for those individuals who may outlive their accumulated savings or who may otherwise become dissatisfied in any way (or believe that they have suffered financially) by following the process described in this website as compared with some other strategy. All articles and sample spending calculators on this website are provided purely for your educational purposes. You are encouraged to seek professional advice from qualified investment/financial professionals before committing to any retirement spending plan and should not simply rely on the results you may obtain with the process and sample spending calculators described in this website.