Annuity Ladder- Part II

One of the questions I often get asked is: "Am I going to outlive my retirement portfolio?" In light of the recent bear markets, this is a very relevant question.

A life annuity provides a steady stream of income until death. It removes the possibility of outliving one's money. However, in many cases, there is no estate value upon death. On the other hand, an investment portfolio provides a retirement income, and upon death, whatever is left, is passed on to the estate. The risk with investments is that the portfolio may run out of money prematurely in a prolonged bear or sideways market. There may be nothing left to pass on.

If your objective is to keep control of your money as long as you can and maximize the estate value, then you need to buy the least amount of annuity, just enough to protect you from running out of income prematurely. In my previous articles, "Investments or Annuity" (February 2002), "Building an Annuity Ladder" (December 2002), I went over these concepts. In this article, I will show you exactly how to design a "Perfect Mix" based on this objective.

Why would you ladder an annuity instead of buying it all at once? There are several reasons:
- The older you are the higher is the payout. As you add new "rungs" to your annuity ladder, you would receive higher payouts for the same amount of premium.
- Laddering will reduce the interest rate risk; the interest rate will be blended over time.
- Portfolio value may go up providing more funds to buy more annuity over time.
- You have control of your money for a longer period of time.

To build an annuity ladder, we weigh the benefits of buying an annuity now against buying it some time in the future. Our logic is this: if we knew for sure that we would have less money in our portfolio to buy the same annuity income stream in the future then we would buy the annuity now. Conversely, if we knew for sure that we would have more money in our portfolio in the future, we would delay buying the annuity. Following this logic, we buy each "rung" of the annuity ladder only by the probability of having less money in our investment portfolio in a future year. This probability depends on historic

market performance, your withdrawal rate and the time between the rungs of the annuity ladder.

Let's first define your "Own Withdrawal Rate". OWR is the total annual income requirement from the portfolio expressed as percentage of the portfolio value. Add up all your projected annual expenses after retirement. Add up all the income from all sources, such as government benefits, company pensions, etc. If your projected expenses are higher than income from these sources, then the difference between your expenses and your income is the shortfall that must be met from your retirement savings. For example, if you want $24,000 annual income (your shortfall) from your retirement savings of $500,000 then your OWR is 4.8%.

I calculated the probability of having less money to buy an annuity for the same income stream (adjusted for inflation and annuitant's age) for different levels of OWR based on 100 years of market history, based on a 60% Fixed Income / 40% equity asset mix. We will call this number "P%" shown on Table 1.

Table 1:

OWR	P%, Probability of having less money after …	
	1 Year	4Years
2%	37%	27%
4%	49%	44%
6%	56%	55%
8%	62%	72%
10%	66%	85%

Next, figure out the sustainable initial withdrawal rate (IWR) from an investment portfolio. Based on 100 years of market history, the IWR is:

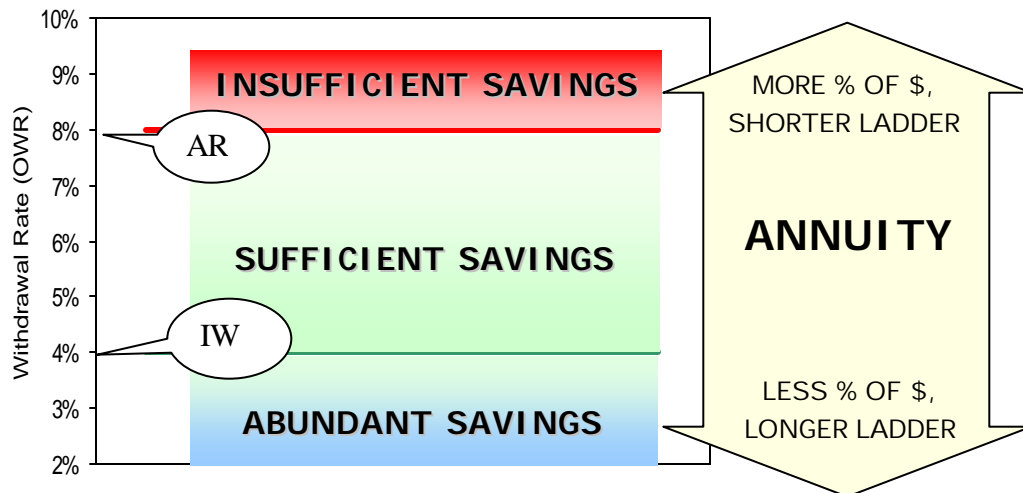| Retirement Age	IWR
55	3.5%
60	3.8%
65	4.0%
70	4.5%
75	5.1%

For example, sustainable initial withdrawal rate (IWR) for a 65-year old person is 4.0%. If you are retiring at age 65 and your retirement savings are $500,000 then your annual withdrawal from your portfolio should not exceed $20,000 (4% of $500,000), adjusted each year for inflation. The figures on this table are based following assumptions: Equities in the portfolio outperform the Dow Jones Industrial Average by 2% annually; asset mix is of 60% fixed income and 40% equities and the projected age of death is 95. Different assumptions will change these IWR values.

Next, obtain quotes for a life annuity. Calculate the payout rate (AR), -the yearly annuity payment divided by the single premium paid to buy the annuity. If your case involves both spouses, then get quotes for a joint annuity. If, for a premium of $500,000 the annuity provides $40,000 yearly income, then your annuity rate (AR) is 8.0%. Make sure to get an up-to-date AR before proceeding further.

Now we have all the data we need to design the perfect mix and an optimum annuity ladder.

Based on how much retirement savings you have accumulated, you will fit in one of the following three categories:

- Insufficient savings, if your OWR is greater than AR,
- Sufficient savings, if your OWR is between IWR and AR,
- Abundant savings, if your OWR is smaller than IWR

Insufficient Savings:
If you are in this category then your expectations are too high. You will need to adjust your lifestyle and/or reconsider your retirement age. Otherwise, your portfolio will likely expire before you do. Some advisors will recommend taking higher risk. While this may work in a mega-bull market, it will fail in relatively flat or bear markets, which is about 65% of the time. It is too much of a gamble trying to generate this income from an investment portfolio. The prudent solution is to purchase an annuity with all of your retirement savings.

Timing: Since the certainty of running out of money is high, you need to build the annuity ladder in one-year intervals.

Dollar Amount: Each year, take an amount equal to the P% (Table 1, 1-year column) of your retirement savings and buy an annuity. The ladder will likely be completed within two years.

Example: You are 65-years old and have a total of $300,000 saved for your retirement. In addition to your government benefits, you want $30,000 of yearly income from your retirement savings. Your OWR is 10% ($30,000 divided by $300,000). Say, the best annuity quote that you received pays $24,000/year for a $300,000 single premium. This works out as an 8% payout rate (AR). The P% on Table 1 (1-year column) is 66%. The dollar amount of the first rung is calculated as $198,000 (66% of $300,000). Buy this annuity now. Next year, buy another annuity for the lesser of the same amount or remainder of the money left in the investment portfolio. In the final analysis, you will probably not get the $30,000 yearly income that you originally sought. You will need to adjust your lifestyle. If at all possible, delaying your retirement a few years can make a big difference.

Sufficient Savings:
If you are is in this category then your savings should likely be sufficient for your retirement needs. You need to design a blend of an investment portfolio and annuity ladder. Calculate the percent of annuity in your "Perfect Mix" using the following equation:

$$A\% = \frac{OWR - IWR}{AR - IWR} \text{ x } 100\%$$

This formula ensures that your withdrawals from your investment portfolio are exactly at your sustainable withdrawal rate.

Example: Say you are 65, have $800,000 in your portfolio and need $48,000 annually from this portfolio. Your OWR is 6% ($48,000 divided by $800,000), your IWR for your age is 4.0% and your AR is 8.0% (from your annuity quotes). Now, calculate the annuity percent (A%) for your "Perfect Mix":

$$A\% = \frac{6.0 - 4.0}{8.0 - 4.0} \text{ x } 100\% = 50\%$$

Your "Perfect Mix" consists of $400,000 of annuity (50% of $800,000) and $400,000 of investment portfolio (calculated as $800,000 minus what you paid for buying the annuity of $400,000). If you bought the entire annuity at once, your annuity would provide $32,000 of annual income (8.0% of $400,000). Your investment portfolio would provide $16,000 ($48,000 minus $32,000) at a sustainable withdrawal rate of 4% of the $400,000. However, for reasons mentioned earlier, it is wiser to ladder this annuity

Timing: The first rung of the ladder is purchased immediately. The second rung is purchased in four years, the third rung –if required- is purchased in eight years, and so

on. We use the 4-year cycle to take advantage of the US presidential cycle that I wrote about in my previous article, "Building an Annuity Ladder" (December 2002)

Dollar amount: Using the P% (from Table 1, 4-year column), calculate the percent of your money allocated to annuity. This is the dollar amount of the first rung of your annuity ladder. Continuing with the same example, P% is 55%. The first rung would be for $220,000 (55% of $400,000). This annuity provides you with $17,600 annual income. You have now $580,000 in your investment portfolio (calculated as $800,000 minus $220,000) and your annual withdrawal from this portfolio is $30,400 (calculated as $48,000 minus $17,600).

In four years time, the market value of your portfolio, as well as your OWR, AR and IWR will change. Continuing with our example, say now your investment portfolio is worth $600,000. At age 69, your IWR is approximately 4.4%. Say your income need from this portfolio stands now at $33,000/year. Your OWR is 5.5% (calculated as $33,000 divided by $600,000). From your annuity quotes, you figure that your AR is now 9.4%. Your new annuity percent (A%) for your "Perfect Mix":

$$A\% = \frac{5.5 - 4.4}{9.4 - 4.4} \times 100\% = 22\%$$

Now you take $132,000 (calculated as 22% of $600,000) from your current portfolio and buy another annuity with it. It provides $12,408 (9.4% of $132,000) of annual income. Your remaining portfolio is now worth $468,000 ($600,000 minus $132,000) and it provides $20,592 ($33,000 minus $12,408) of yearly income. This is exactly 4.4%, your sustainable withdrawal rate. You can now safely index this withdrawal amount for inflation for the rest of your life.

Review your financial situation, and if necessary recalculate every four years.

Abundant Savings:
If you are in this category then you have enough money to last you at least until age 95 *and* leave an estate. The lower is your OWR; the more significant will be the estate. A properly balanced and diversified investment portfolio should do just fine. You do not need to buy any annuity unless you want peace of mind. If that is the case, here is how you can optimize an annuity ladder:

Timing: The first rung of the ladder is purchased immediately and the subsequent rungs are purchased every four years.

Dollar Amount: Using the P% (Table 1, 4-year column), calculate the percent of your money that needs to be allocated to annuity. Separately, obtain a life annuity quote specifying how much of a single premium you need to pay for your required income. The dollar amount of the first rung of your annuity ladder is the lower of these two numbers.

Example: You are 65-years old, have $1,000,000 saved for your retirement and need $20,000 from this portfolio annually. Your OWR is 2%. You do not need an annuity, however, you like the certainty of annuity income. The P% is 27% (Table 1, 4-year column). The dollar amount is $270,000 (27% of $1,000,000). Your annuity quote indicates that the single premium needed to provide you with $20,000 annual income is $250,000. We use $250,000 as the dollar amount of your first rung, the lower of these two amounts. Your annuity provides all your income needs. Your remaining investment portfolio is there only as a backup for unforeseen expenses. Review your needs and recalculate -if required- the second rung in four years. A wiser choice would be to ladder this annuity in the same manner as described in the previous section for "sufficient savings".

In conclusion, by applying this technique, your retirement prospects can be improved, sometimes significantly. I recently worked on a case: A client needs $24,000 annually from his investment portfolio of $500,000. His asset mix is 40% fixed income and 60% equities, rebalanced each year. Market history shows that in the worst case during the last century, he would have run out of money in 16.7 years as indicated in Figure 1. His average portfolio life was 30.6 years. On the chart, the heavy line shows what a standard retirement plan would have projected. The lighter lines show how much worth his portfolio would have been if he were to retire in each of the years between 1900 and 1999. After optimization and applying the "Perfect Mix" technique, the minimum portfolio life extended to 24 years, a 44% improvement as shown in Figure 2. The average portfolio life increased to 36.3 years, a 19% improvement. The optimization process increased the portfolio life, improved the estate value, enhanced the security of income and reduced volatility of the investment portfolio.

Figure 1: Non-optimized Portfolio 1900-1999, Minimum Life: 16.7 years
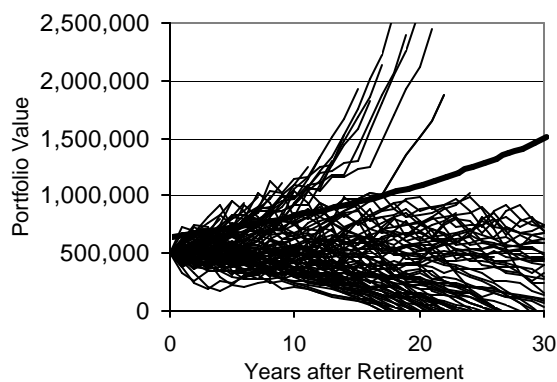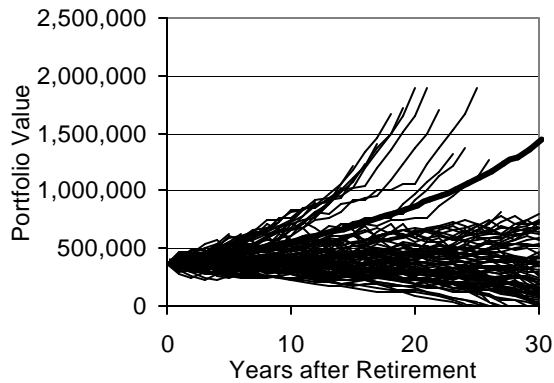

Figure 2: Optimized Portfolio 1900-1999, Minimum Life: 24 years

Now you have a crystal-clear method of building annuity ladders in combination with investment portfolios for maximum portfolio longevity, flexibility and income security. Further information is available at www.retirementoptimizer.com. Beware that this analysis is based on one hundred years of market history. The future performance may be different. The information and methods described here are of general nature and may not necessarily apply to your specific circumstances.

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