The Retirement Red Zone® is the label invented by Prudential to describe the critical years immediately before and after retirement, when financial plans are highly vulnerable to adverse market movements. In many previous articles, I have examined strategies to reduce risk after retirement, but here I will focus on the decade before retirement. I'll compare strategies that rely on traditional stock-bond portfolios with those using various types of annuity products.

An example

I'll base this analysis on a 55-year-old female who plans to retire at age 65. She wishes to produce secure retirement income to add to her Social Security. Ideally, she would like to protect against both market volatility and inflation, but product options for pre-retirement inflation protection are limited. For this example, her focus will be on reducing the impact of market volatility. I will measure the various strategies by the amount of investment needed at age 55 to provide $10,000 of annual nominal lifetime income beginning at age 65.

This analysis deals exclusively with pre-retirement risk, so for those strategies utilizing regular investments, I will assume conversion at retirement into a single-premium immediate annuity (SPIA) paying a level $10,000 per year. I used Monte Carlo simulations to model investment uncertainty and build in variable mortality. I assumed stocks earn an average annual nominal return of 7.3% and bonds earn 2.5%, and I deducted 0.15% for expenses. These are lower than historical investment returns and similar to those I proposed in my January 2013 Advisor Perspectives article.

Investment strategies

If this individual decided to rely on regular bond and stock investments during the pre-retirement period, she would need to set aside enough funds at age 55 to purchase a SPIA paying $10,000 annually at age 65. Based on current SPIA pricing from Income Solutions®, that price would be $159,000.

Her basic choice would be how much stock market risk to take in the lead-up to retirement. This chart shows the money she would need to set aside to be at least 95% confident of having enough at retirement for the SPIA purchase, with varying stock/bond allocations. I show a bequest measure calculated as the expected present value of excess funds. For a discount rate, I used the assumed investment earnings rate for the particular strategy – 5.47% in this case for the 65/35 portfolio – and applied the same approach in subsequent
examples. This excess, if realized, could either be used for a bequest or additional spending after retirement. I also show a withdrawal increase column, which is 0% for these strategies involving the purchase of a level-pay SPIA at retirement but will be non-zero later for some of the other strategies.

**Investment strategies**

<table>
<thead>
<tr>
<th>(Stock/Bond) Strategies</th>
<th>Initial Investment</th>
<th>Probability of Success</th>
<th>Bequest Present Value</th>
<th>Withdrawal Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>(65/35) at 55 then SPIA at 65</td>
<td>$194,000</td>
<td>approx. 95%</td>
<td>$104,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>(35/65) at 55 then SPIA at 65</td>
<td>$166,000</td>
<td>approx. 95%</td>
<td>$64,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>Zero-coupon bond at 55 then SPIA at 65</td>
<td>$128,000</td>
<td>approx. 100%</td>
<td>$0</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

If she used a somewhat aggressive 65/35 stock/bond allocation, she would need to set aside $194,000 at age 55 to be 95% confident of having the needed $159,000 at retirement. The likelihood is that this strategy will leave excess funds at retirement. She could lower the initial investment by reducing the equity allocation as I show for a 35/65 allocation, but going to a more conservative strategy would also lower the bequest.

The final investment strategy shown would lock in the $159,000 SPIA purchase by investing $128,000 in a zero-coupon Treasury strip at a rate of 2.20%. This investment would grow to the amount needed to purchase the SPIA but leave no excess funds.

For all three cases I show probabilities of success as approximate. This reflects that we don't know what SPIA prices will be in 10 years.

**A deferred-income annuity (DIA) strategy**

We'll now look at strategies using various types of annuity products, beginning with a deferred-income annuity (DIA). This product is essentially a SPIA with a long deferral period before payments begin. I have previously written about DIAs using examples where the product is purchased at age 65 with lifetime payments beginning at age 85. Here I use an example where the purchase age is 55 with payments beginning 10 years later. These rates were furnished by Curtis Cloke and Bob Lemon of Thrive® Income, who specialize in these products.
A deferred-income annuity (DIA) strategy

<table>
<thead>
<tr>
<th>Type of DIA Used</th>
<th>Initial Investment</th>
<th>Probability of Success</th>
<th>Bequest Present Value</th>
<th>Withdrawal Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-refund DIA</td>
<td>$95,000</td>
<td>100%</td>
<td>$0</td>
<td>0.00%</td>
</tr>
<tr>
<td>DIA with cash refund</td>
<td>$104,000</td>
<td>100%</td>
<td>$9,000</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

The first row in the chart is for a no-refund DIA product with a purchase price of $95,000. It pays a lifetime income of $10,000 per year beginning at age 65, but nothing is paid if the individual dies before age 65. This $95,000 cost is significantly less than the $128,000 for the bond/SPIA combination shown above. A key difference is that, with the bond/SPIA, the $128,000 plus interest represents liquidity for the purchaser or a bequest for heirs during the pre-retirement period. The no-refund DIA provides neither liquidity nor funds for heirs, but it does provide a low-cost way to meet the retirement income objective.

I also show a DIA with a cash refund, which pays heirs for any amounts of the initial deposit not recovered in the form of DIA payments before the annuitant passes away. The bequest of $9,000 is the expected present value of such payments. This product provides a closer match to the bond/SPIA, but not an exact match. The DIA with refund doesn’t grow with interest during the pre-retirement period, but it does pay benefits for a limited period after age 65, whereas the bond/SPIA does not.

Variable annuity (VA/GLWB) and fixed-indexed annuity (FIA) strategies

Two other annuity products can be used to generate guaranteed lifetime withdrawals. The variable annuity with a guaranteed lifetime withdrawal benefit (VA/GLWB) provides both lifetime income and stock market participation. This December 2011 Advisor Perspectives article by Wade Pfau described the product in detail.

VA/GLWBs run with two sets of books. The account value begins with the initial investment, moves up and down with investment performance, and decreases as withdrawals are taken. The benefit base operates like the account value but can never decrease as long as withdrawals stay within allowable limits. It ratchets up whenever the account value exceeds the benefit base. This ratchet feature is likely to produce the biggest boost to the benefit base during the period before withdrawals begin (ages 55 to 65, in our example). Withdrawal guarantees (typically 5% for a 65-year-old) are calculated as a percentage of a benefit base and continue for life even if the account value is depleted.
The fixed-index annuity (FIA) also offers some equity-market participation, but fluctuations in annual returns are limited by floors and caps. Like the VA/GLWB, this product includes both an account value and a benefit base, with lifetime withdrawal guarantees calculated as a percentage of the benefit base. As with the VA/GLWB, 5% is a typical guarantee for a 65-year-old.

This chart shows expected outcomes for two versions of a VA/GLWB and an FIA.

Variable annuity (VA/GLWB) and fixed-indexed annuity (FIA) strategies

<table>
<thead>
<tr>
<th>Product Used</th>
<th>Initial Investment</th>
<th>Probability of Success</th>
<th>Bequest Present Value</th>
<th>Withdrawal Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-cost VA/GLWB</td>
<td>$125,000</td>
<td>approx. 100%</td>
<td>$18,000</td>
<td>1.30%</td>
</tr>
<tr>
<td>Average-cost VA/GLWB w/ 5% roll-up</td>
<td>$109,000</td>
<td>approx. 100%</td>
<td>$9,000</td>
<td>0.39%</td>
</tr>
<tr>
<td>FIA with 3% cap and bonus</td>
<td>$95,000</td>
<td>100%</td>
<td>$10,000</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

The low-cost VA/GLWB is based on the Vanguard variable annuity with total annual charges for the lifetime withdrawal benefit and other fees estimated at 1.78%. The product requires a larger investment than the DIA to produce $10,000 of annual withdrawals beginning at age 65, but the ratcheting after age 65 can produce withdrawal increases. The probability of success is shown as "approximately 100%," because the initial allowable withdrawal at age 65 will depend on investment performance during the prior 10 years – it may overshoot or undershoot. I've shown results based on the average expectation.

The second VA/GLWB in the chart contains an additional feature called a roll-up. Before withdrawals begin, the ratcheting of the benefit base is guaranteed to be at least 5% each year, providing a further boost to allowable withdrawal levels. Because of this enhancement, a smaller initial investment is needed to hit the initial $10,000 withdrawal target. But, the expected withdrawal increases are significantly reduced, reflecting both the effect of the roll-up and higher annual charges (estimated at 3.50%). The product modeled here is not a particular example, but what I consider representative of the most popular VA/GLWBs with roll-ups.

Overall, for the VA/GLWBs, the investments required are higher than with DIAs, but they are somewhat offset by the prospect of increases in allowable withdrawals.

Costs affect performance, as these examples illustrate.
The third row of the chart shows expected outcomes for an FIA, in this case the EquiTrust MarketTwelve product. The specialists at All Things Annuity provided the product information. This particular product meets the retirement withdrawal objective very efficiently in relation to the required initial investment. The reason it works so well for the example is that the MarketTwelve’s growth in the benefit base is enhanced by an annual 6.5% roll-up as well as a 12% bonus spread over the first three years. The cap for crediting returns is 3%, which makes it virtually impossible for the account value to ever exceed the benefit base (and increase allowable withdrawals). Still, the product certainly offers a way to efficiently achieve the $10,000 initial withdrawal target.

Conclusion

Here are some other conclusions to keep in mind:

- It is risky to rely on regular investments with a heavy stock allocation to accumulate funds during this pre-retirement phase. Achieving a high level of safety may require setting aside twice the funds needed for the lowest cost annuity strategies ($194,000 for the 65/35 stock/bond strategy versus $95,000 for the DIA and FIA strategies).

- Market volatility risk can be effectively managed with annuity strategies, but not pre-retirement inflation risk.

- For all annuity products, and especially the more complex ones such as VA/GLWBs and FIAs, the key challenge is to find the particular product that best meets the client need. Advisors either need to maintain familiarity with a wide array of products, or partner with others who possess such expertise.

- For VAs and FIAs with lifetime withdrawal benefits, one must understand the interactions among roll-ups, bonuses, caps and charges. For example, an FIA with a high roll-up and a low cap is unlikely to produce post-retirement increases in allowable withdrawals.

- Be aware of whether the annuity provider can alter charges or credits on products after purchase. Products that look attractive might disappoint later. Also be aware of surrender charges. In particular, some of the FIAs have heavy surrender charges over a long period following purchase. Such charges limit flexibility after purchase.

- Advisors need to pay attention to insurer credit ratings and limits on support provided by state guaranty associations, as I discussed in this August 2102 article.
To meet the client need for this particular example, I liked the low cost and simplicity of the no-refund DIA. I was also impressed with the FIA (though I would want to read the fine print carefully to be sure that the bonuses, roll-up rates, and withdrawal rates were fully guaranteed). Of course, different client situations will require different product solutions.

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