Annuity Analytics: What is a Guaranteed Rate Really Worth?

Advisors should provide clients with the embedded investment return (i.e., the cash-equivalent yield) for the guaranteed lifetime income benefit (or GLiB) variable annuities they sell. Here's why and how.

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The sales pitch sounds too good to be true, and should instantly set off financial alarm bells. Here's how it goes: "Give us your money today and we will guarantee you at least 5, 6 — and even 7 percent — for the next five, 10 or 15 years. And, if and when the stock market eventually recovers, you might earn even more!" This, remember, is being offered in an economic environment in which Treasury bills yield 0 percent and government bonds barely 4 percent.

Most of the promotional material touting "guaranteed lifetime income benefit" variable annuity (GLiB VA) products is very careful to emphasize that these guarantees — of 5, 6 or 7 percent — are applied to an income base and not to the account value, which fluctuates over time. However, I can attest that few people understand how to calculate the implied return on these products and convert it into a number comparable to interest in a bank account or investment returns on a mutual fund. Instead, the marketing material speaks the language of "investment Celsius" to human beings who are hard-wired to understand "economic Fahrenheit." The numbers sound similar, but the scales are completely different. In an attempt to clear up this confusion, I would like to devote this inaugural article of Annuity Analytics to explaining the arithmetic of GLiB VAs correctly.

Let's take an example. Say you are 55 years old and invest $100,000 in a variable annuity policy offering a minimum 7 percent guaranteed growth rate over 10 years. This growth guarantee implies that, at the very least, you will have an income base of $196,715 by the age of 65, for those companies who treat the number as compounding. (Some do only simple interest.) This number is computed in a straightforward manner by multiplying $100,000 times (1.07)^10. To be sure, the income base might be higher if the underlying investment subaccounts cooperate — by defying recession's gravity and all management fees — and rise by more than 7 percent.

Age 55 purchase of VA with Guaranteed Lifetime Income Benefits (GLiB): What is the Cash-Equivalent Yield you are Really Getting?

Lifetime income starting at age 65, as a Percent of the Guaranteed Base:

Guaranteed Growth	4% For Life	5% For Life	6% For Life	7% For Life
5%	-2.03%	0.18%	2.02%	3.61%
6%	-1.10%	1.13%	2.99%	4.59%
7%	-0.17%	2.09%	3.97%	5.58%
8%	0.77%	3.04%	4.94%	6.57%

Lifetime income starting at age 70, as a Percent of the Guaranteed Base:

Guaranteed Growth	4% For Life	5% For Life	6% For Life	7% For Life
5%	-0.61%	0.88%	2.12%	3.17%
6%	0.34%	1.84%	3.09%	4.15%
7%	1.29%	2.80%	4.06%	5.14%
8%	2.23%	3.77%	5.03%	6.12%

Your contract further stipulates that the income base — whatever it is at the withdrawal commencement date, and I have chosen age 65 — will be multiplied by a guaranteed withdrawal rate, say 5 percent, to determine your lifetime income benefit. I will refer to this pair of numbers, 7 percent and 5 percent, as the guaranteed growth rate factor and the guaranteed withdrawal factor. Every GLiB VA policy includes both factors. And, from the consumer's point of view, larger numbers are better.

So, to recap our example, if you want to retire at 65 and start drawing down from your GLiB VA (purchased at 55 for $100,000 with a 7 percent growth rate factor and a 5 percent withdrawal factor), the absolutely worst case scenario you will face is a guaranteed yearly income of 5 percent of the $196,715 base, or approximately $9,836 for life. This number sounds nice, but is precisely where my problems start.

Did you ever wonder what it costs to purchase a basic pension at age 65 which pays the same $9,836 per year for life? This is not a hypothetical question. There is an active market for single premium income annuities (SPIA), which have been sold by major insurance companies for hundreds of years. In March 2009 the cost of a $9,836 per year income annuity was approximately $122,940. (This is an average at age 65 from a number of competitive insurance vendors. Some will charge less in exchange for taking on some insurance company credit risk.) But as you may have noticed, this is nearly 40 percent less than the guaranteed income base amount of $196,715.

The fancy hotel is giving you 10 percent off the official "rack rate," but it's even 40 percent cheaper on Travelocity.

In other words, the catch with GLiB VAs is that to get the enticing growth rate factor applied to the $100,000 base, you have to put up with a very distasteful withdrawal factor. The 7 percent growth can't be disentangled from the 5 percent withdrawal rate. It's like going to a sale at your favorite store where everything is 50 percent off, but the local sales tax has simultaneously increased to 100 percent.

In my opinion, advisors should provide clients with the embedded investment return (i.e., the cash-equivalent yield) for the GLiB VAs they sell. The proper way to calculate this uses a three-step process, and it behooves all financial advisors to both understand this process and to explain it to their clients. Here are the three steps:

• First, get a single premium immediate annuity income quote — with no guarantees or survivor benefits — for a given deposit premium and a hypothetical retiree aged 65, or whenever you plan to start the income. Divide the annual income into this premium to get what I call the market's annuity factor.

• Secondly, multiply the worst-case-scenario guaranteed income amount — which is guaranteed income base times lifetime income rate — by the market's annuity factor at age 65 (or whenever you plan to start the income).

• Finally, divide the resulting number by the original deposit premium to solve for the cash equivalent yield over the 10-year waiting period. In this step, you are computing the annual investment rate that has $100,000 become $122,940 after 10 years. This equation is (122940/100000)^(1/10)-1. (To repeat: $122,940 is the pure cost of buying a yearly $9,836 for life at age 65.)

Here's the bottom line: In the (7 percent, 5 percent) guarantee pairing, the cash-equivalent yield for this GLiB VA works out to a meager 2 percent. That is the true value of the growth and withdrawal rate combination. And that is a number in units your customers can understand and directly compare to bank interest, mutual fund returns and T-bill yields.

Varying the ages, waiting periods and guaranteed growth and withdrawal rate combinations for GLiB VAs will lead to a range of implied investment returns, but they always, inevitably work out to something less than the growth rate highlighted in the policy.

For example, a GLiB VA purchased at age 55 with a 5 percent guaranteed growth rate and a 5 percent lifetime income amount starting in 15 years (age 70) represents a 0.88 percent cash-equivalent yield. If the guaranteed growth is 5 percent but lifetime income is 6 percent, the cash-equivalent yield is 2.12 percent, while 7 percent for life would equal 3.17 percent. The table above displays a number of other common combinations, and you can compute your own values using the free calculator available at www.qwema.com.

Now, don't get me wrong: I have been observing, researching and commenting on this industry for many years, and there's probably no greater (academic) advocate of the importance of hedging personal longevity, individual inflation and the terrifying sequence of returns risk than I. I have given credit where it's due, advocated where appropriate and criticized where necessary. But I worry that consumers may be rushing into inappropriate GLiB VA purchases because they do not know how to properly translate investment Celsius into economic Fahrenheit.

Accordingly, my preferred way of explaining or interpreting the guarantees with a variable annuity policy is by conceptually splitting the product into two parts. The first part is a straightforward investment, while the other is the embedded equity put option (which provides the downside protection). The put option guarantees that if markets decline, the contract can be converted or exchanged into a lifetime income vehicle. Moreover, every put option has a strike price — and the strike price of the GLiB VA combination is the amount it would cost you or your client to purchase an equivalent income stream in the open market.

For example, the fair market cost for an income stream of $9,836 per year starting at age 65 (for a 55-year-old purchaser in a 7 percent guaranteed growth rate and 5 percent of lifetime income scenario) is $71,500 today. This is the price of a pure deferred annuity (a.k.a. ALDA, or advanced life deferred annuity) with a 10-year waiting period. Thus to my way of thinking, the GLiB VA we are examining can be best understood as $100,000 invested in a diversified portfolio with a put option that is struck at $71,500 and is currently 28.5 percent out of the money.

The value of this put option and the embedded income protection it provides depends primarily on the volatility of the underlying subaccounts. The more equity in the subaccounts, the more valuable is the put option. Likewise, the greater the asset allocation restrictions, the less valuable is the put. This is basic derivative economics.

To conclude: It's time to acknowledge that a 7 percent guarantee is really closer to a 2 percent investment return, a 6 percent guarantee to a paltry 1 percent return.

There can be no doubt that allocating a portion of your nest egg to a variable annuity with a guarantee can be an excellent risk management strategy, but make sure you know what you're buying — and that you buy for the right reasons.