

# Tackling the Income Annuity's Risk/Reward Equation

**T**HE DEBATE IS FINALLY OVER. Income annuities can help optimize a retiree's lifetime income. All the research pretty much arrives at the same conclusion: Life annuities should be part of a healthy retiree's income portfolio. But in spite of all of the academic evidence, the fixed-income annuity, for the most part, still goes unused. The insurance industry sells a relatively small amount of individual immediate annuities.

What explains the low industry sales, especially given the product's high potential value? Researchers offer several plausible explanations, but there's no neat and easy answer to what is now coined the "annuity puzzle." One common explanation is the general lack of appreciation of the product's value proposition. In effect, the research suggests that people feel the income annuity doesn't give them their money's worth.

There are two ways that may help educate people about the value of the product. The first involves the use of interest-adjusted cost illustrations similar to those provided with life insurance policies. These illustrations, however, don't capture the asset diversification benefits the product can offer retirees. The second approach involves a new contract design that's aimed at helping individuals tackle longevity risk in a well-reasoned, yet relatively simple, manner.

### Cost vs. Value Equation

The traditional life annuity contract arguably leaves buyers with the misconception that the insurer can make a windfall profit. Individuals seem to focus their full attention on the "cost" to heirs if they should die earlier than expected. In fact, this cost (i.e., the forfeiture risk) is very visible and often appears to overshadow the economic advantage of the product's longevity protection.

Forfeitures are, however, a necessary element of the life annuity's mortality pooling mechanism. We could explain that the amounts forfeited are actually the "mortality charges" used to fund future "mortality credits," which get distributed to those who live beyond life expectancy.

But how do we convince people that the trade-off between the "early" charges and the "late" credits is fair? The approach suggested here is to use graphs that illustrate



the interest-adjusted dependence between mortality credits and forfeiture risk. This kind of illustration is fairly simple to construct. For example, at a net annual interest rate of 4 percent, the relationship might look as shown in Figure 1.

This chart represents the accumulated net value of the contract benefits (income payments growing at interest) less the contract cost (premium growing at the assumed rate of 4 percent).

Note that we could have calculated present values, instead of accumulated future values.

In our example, the contract guarantees income of \$700 per month for life (based on annuity rates achievable in 2006). Although it's not shown here, an investment portfolio earning a net annual return of 4 percent (5 percent) could only deliver about \$475/month (\$530/month) for 30 years. (The annuity delivers more than 30 percent extra income during the first 30 years and an extra \$700/month thereafter.)

There's absolutely no guesswork in these illustrations. We know all the financial facts; both premium and income are known before the purchase. There's no wiggle room for error (at least not in a non-par life annuity where the insurer bears all the interest, mortality, and expense risks).

The results are very sensitive to the illustration interest rate. And, as Figure 2 confirms, the annuity's economic advantage is inversely related to the illustration rate. To state the obvious, in our example, buying the contract's \$700 monthly income stream with a portfolio's lower-yielding assets would achieve higher economic gains for that portfolio.

### More Value Than an Extra 1 Percent a Year

Many individuals are quick to dismiss the advantage an annuity can bring to a retirement income plan. The use of interest-adjusted cost/value illustrations may help shift some attention to the insurance gains that eventually emerge in 20 to 30 years' time.

FELIX SCHIRRIPA is with ELM Income Group, Inc. in Washington. He can be reached at felix@elmincomegroup.com.

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In addition, once the buyer's asset portfolio enters its "drawdown" phase, we can demonstrate that the annuity generates much more longevity protection than, say, could be squeezed from earning an extra 1 percent a year on assets. This is an important point that's worth explaining to retirees, and it's illustrated in Figure 3.

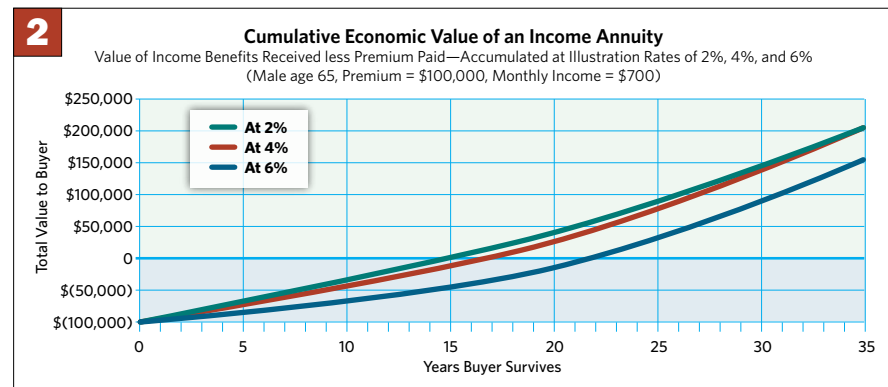
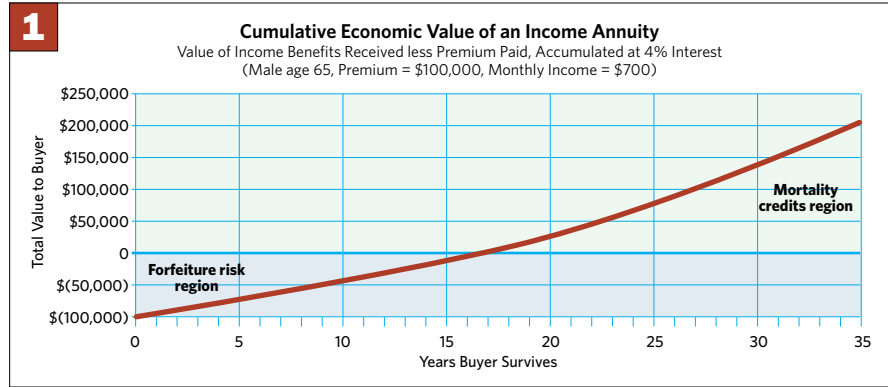
In the asset accumulation phase, a 1 percent improvement in a portfolio's annual yield adds, very roughly, about \$100,000 of gain in 30 years (per \$100,000 of starting assets). However, because of the steady income withdrawals, once the portfolio enters the drawdown phase, an extra return of 1 percent a year can deliver only \$50,000 of gain in 30 years. (In other words, earning 4 percent and making monthly withdrawals of \$475 would exhaust the original \$100,000 portfolio in 30 years. However, if that portfolio earned 5 percent a year, we'd have \$50,000 in assets still available for withdrawal.)

As we've illustrated, and all else being equal, the life annuity generates more than \$150,000 of potential economic value; and it's guaranteed to emerge. The "extra" money comes from mortality credits (i.e., the pooling mechanism). In other words, pure investment products could never guarantee these results.

### Mortality Credits and Interest Guarantees

The annuity's economic value actually comes from two major sources. The pooling mechanism, or mortality credits, is an obvious source of future potential value. The other source, less obvious but still very significant, is a direct result of the product's implicit interest and expense guarantees. In fact, the life annuity can add a new layer of asset diversification benefits to many retirement income portfolios.

Unfortunately, our illustrations don't score the value of the product's diversification benefits. Yet we know that the fixed annuity has rather unique annual return



characteristics, especially relative to the returns of stocks and bonds.

In our example, the product's theoretical internal rate of return (IRR) is 5.86 percent after 20 years of income payments. After 30 years of payments, the buyer's theoretical return on premium increases to 7.77 percent. And, unlike the volatile results expected with stocks and bonds, the annuity's series of increasing annual yields is guaranteed (there's zero volatility). The product's distinctive pattern of increasing annual returns, a net "asymptotic return" of 8.73 percent in our example, can dramatically improve the economic results achieved by retirement income portfolios.

### Improved Cost/Value Relationship

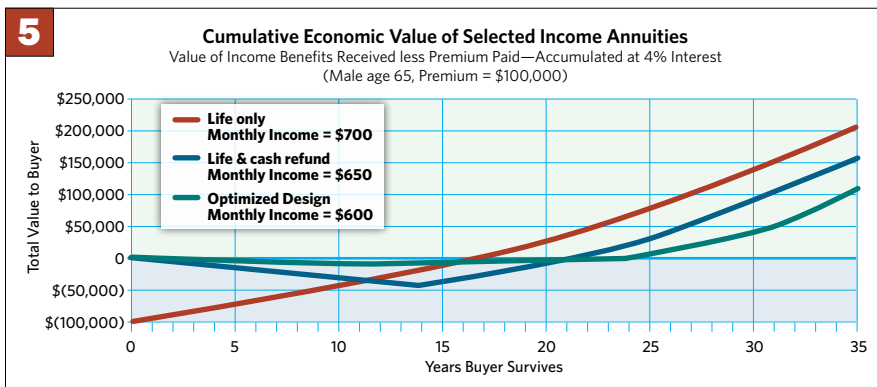
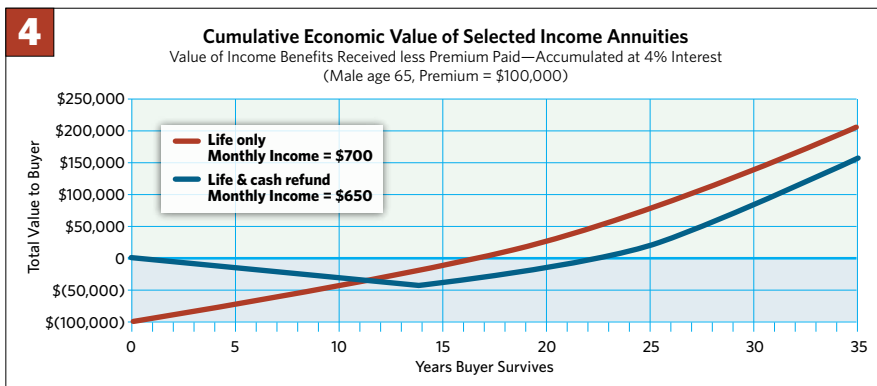
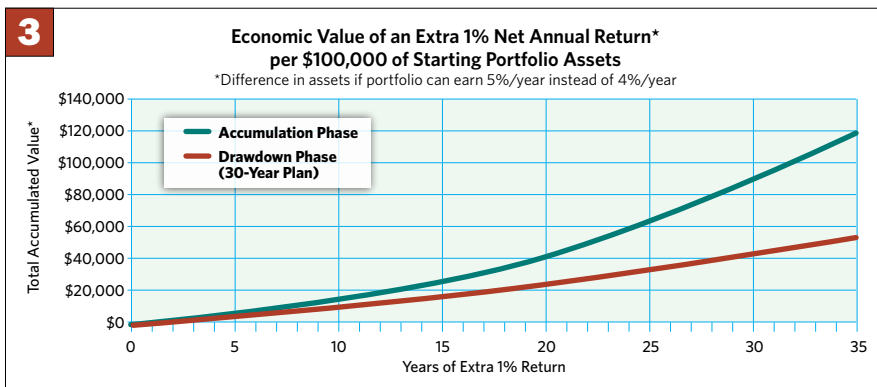
Even if the cost/value relationship is fully appreciated, some people will still object to the notion of potentially forfeiting their full premium. This complaint is something that insurers could argue is addressed by the menu of death benefit features that have been added to the classic life annuity, such as term-certain periods, cash refund, and joint and survivor.

It's not clear how the industry developed so many different and arguably complex forms of death benefit provisions. History aside, adding death benefits to the annuity reduces the contract's lifetime income. Yet

despite the hit to income, most of today's contracts are purchased with some death benefit feature. It should be fairly obvious that death benefits (for example, certain periods) have helped increase the popularity of the income annuity by, in effect, helping to reduce the product's perceived cost (primarily, forfeiture risk).

Let's look at the illustration for a payout annuity with a standard cash refund death benefit (an optional feature providing that if the annuitant dies before the total of all income payments received equals or exceeds the premium paid, the shortfall is paid to the beneficiary in a single sum). Unlike the straight life annuity, where the perceived cost is highest on day one, the buyer's cost now peaks in about 13 years at roughly \$35,000 and break-even happens in about 19 years. This "compromise" between the contract's income and the death benefit has proven to be attractive to many buyers.

We could argue that death benefits have come at the expense of the product's longevity protection. However, the counterargument—that death benefits have actually helped deliver more longevity protection—is at least equally plausible. After all, the product has to be purchased to provide protection (and most sales have happened because of these death benefit features).



**Optimizing the Cost/Value Relationship**

In theory, there’s no need for income annuities to come with a broad array of potentially confusing death benefit features (term-certain periods, cash refund). If the array is merely intended to address the buyer’s concern about forfeiture risk, then better solutions should be available today. For example, instead of forcing menu-driven forfeiture decisions, contracts could be restructured to offer buyers the flexibility to select the level of forfeiture that makes them most comfortable.

In fact, these contracts could even be redesigned to help buyers achieve an “optimal compromise” (the highest lifetime income at the lowest possible forfeiture level) with their premium dollars. These

optimal solutions could be developed using linear programming techniques—the same branch of mathematics that’s sometimes used to find the smartest way to consume limited resources when faced with competing goals. In the case of the income annuity, the buyer’s assets (i.e., premium dollars) represent the limited resource and the competing goals are to minimize forfeiture risk and maximize income for life.

Rebuilding the fixed annuity, using this kind of mathematical logic at its foundation, would offer the typical buyer the ability to skillfully and rationally address longevity protection and forfeiture concerns. In essence, an “optimized” design would allow our buyer to juggle his conflicting priorities (maximum income and

minimum forfeiture) and then purchase what he perceives to be the most sensible compromise for his unique situation.

For completeness, let’s see how the risk/reward relationship might look using an optimized annuity contract.

In the optimized design, our buyer’s maximum perceived cost peaks at roughly \$10,000 in about 11 years. Yes, there’s less income, but it’s the highest lifetime income he can achieve subject to his forfeiture constraints (which haven’t been described here). Of course, if he’s willing to accept more forfeiture risk, our optimized annuity product would generate higher lifetime income. In the extreme case (i.e., full forfeiture), the lifetime income would equal \$700 per month, the amount available with the traditional life annuity.

**Conclusions**

The classic life annuity maximizes longevity protection (lifetime income) but also maximizes forfeiture risk. Of course, at the other extreme, with no life annuity, there’s no forfeiture risk but also no longevity protection.

A new contract design could help buyers come to grips with one of the common concerns mentioned about fixed annuities: forfeiture (cost). Like other insurance products, longevity protection isn’t free and can’t be purchased without some forfeiture risk.

An optimized annuity design could help retirees better appreciate that forfeiture risk and longevity protection are competing goals. Given that these concerns are competing for the same dollars, a well-reasoned compromise position could be the wisest solution for many retirees. And the fixed-annuity contract can be restructured to deliver the solution in a customer-friendly package.

Will buyer behavior change if insurers: a) actively illustrate the income annuity’s cost/value relationship and b) offer an “optimized” annuity design? It’s entirely possible that sales will continue at their historically low levels. But it’s also possible that the industry will attract many more buyers and, in so doing, would help many more retirees strengthen their retirement income plans.