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# The Happiness Hedge

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One of the nuts that the life insurance industry (especially the retirement side) has been trying to truly crack for as long as any of us can remember, is selling its customers on the value of guaranteed income in retirement. There has been progress made on some fronts; for example, deferred annuities that include a guaranteed lifetime withdrawal benefit (GLWB) have sold reasonably well. However, I'm not convinced that our customer base (sales or client, really) grasps the full value of the guaranteed income stream itself. Until they do, I don't believe such a feature will ever be sold or utilized to its maximum advantage.

Part of the problem is this: The way the concept is sold is incomplete. Guaranteed income—which in this article I will always refer to as a single premium immediate annuity (SPIA), although a GLWB can fulfill the same purpose—often touted simply as a hedge against outliving one's assets. Although that is important, it is an incomplete picture of what guaranteed income does for a retiree.



## INTERNAL HEDGES

If a given investor holds one security and wants to remove the risk, they likely must purchase derivatives in the marketplace. By doing so they take a security with nice expected returns (let us say lognormal with  $\mu = 7$  percent and  $\sigma = 15$  percent), and remove the risk premium that provides those expectations in the high single digits. The more fully we hedge the risk, the closer our earnings get to the risk-free rate (which today is roughly 0 percent).

If they hold two such securities that are highly positively correlated, it diversifies away some risk, but not a ton. A 50-year accumulation example might look like Figure 1.

Figure 1  
Equities With 59 Percent Positive Correlation

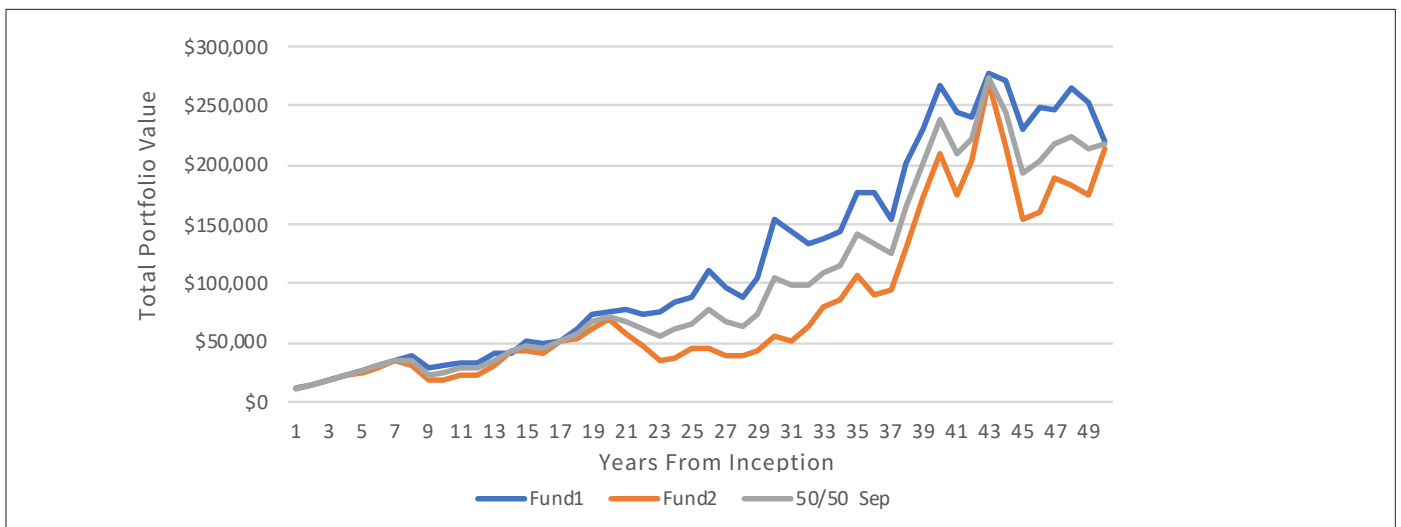
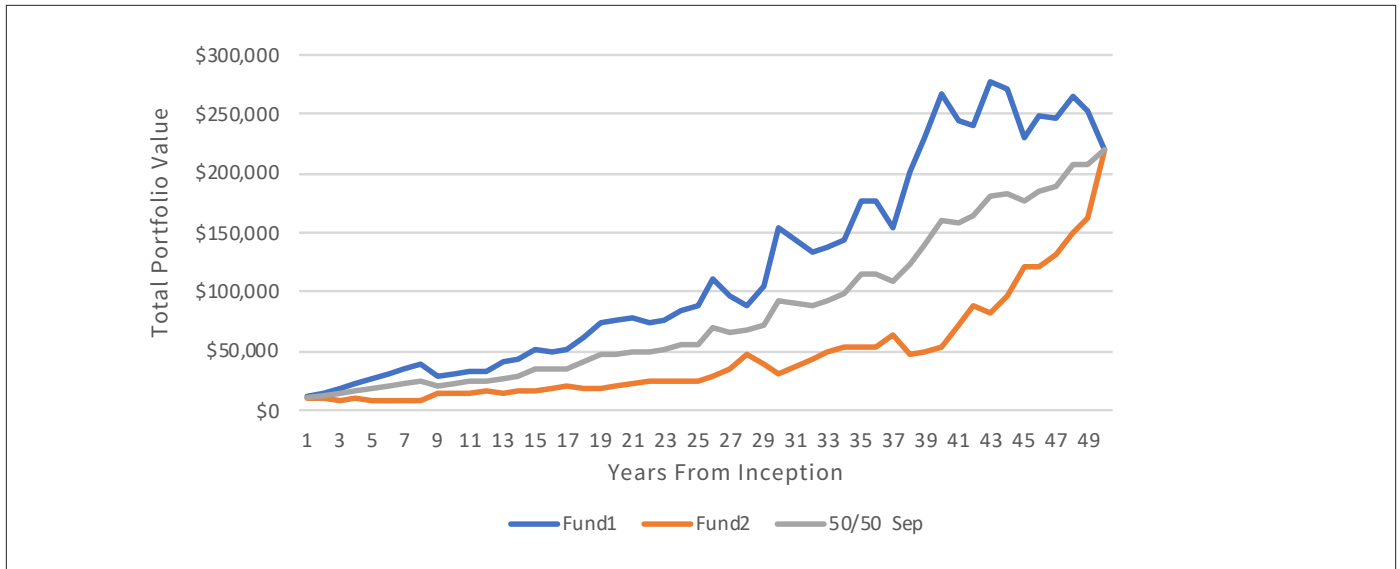


Figure 2  
Equities With 83 Percent Negative Correlation



But if they could find two equity instruments that were highly negatively correlated, they’d have a situation more like Figure 2.

This is a gorgeous result, maintaining the equity premium but with almost no risk. Unfortunately, obtaining this result is like experimenting with Schrodinger’s cat—nice in theory, but untethered from reality.

However, as insurers we are sometimes able to sell liabilities that do work like this. Some players, for example, that sell both variable and fixed indexed annuities have been able to parlay those offsetting risks to reduce hedging requirements on both. Many other such applications are possible.

**RETIREE “HAPPINESS”**

Any long-term guaranteed income product (SPIA or GLWB) is a direct hedge of longevity risk. The longer an annuitant lives (related to the “risk of running out of money”), the greater in hindsight the value of the guaranteed income stream. This is obvious on its face.

However, guaranteed lifetime income in a retirement portfolio can act as a hedge of something much more important than that!

To be truly happy in retirement, I believe any retiree needs both a guaranteed income and a fairly reliable pot of extra discretionary or liquid money. If you don’t believe me, spend some time with seniors who have been reduced to a fixed income and virtually nothing in the bank. They are not happy campers—not at all. Failure in either part of this paradigm is retirees’ true long-run

risk. Retirees need to know that our industry has a complete solution.

How might one measure and test this “happiness” concept? Well, I’m sure there are many possibilities, but for someone retiring with a pot of money, Table 1 provides the rubric I’ve chosen.

Table 1  
Retiree Long-Term Happiness Rubric

Scenario	Fund % of Initial	% of Full Withdrawal Taken	Happiness Score
Happiness Range 2	200%+	100%	2.0
Happiness Range 1.5	150–200%	100%	1.5
Happiness Range 1	75–150%	100%	1.0
Normal Situation	30–75%	100%	0.0
Sadness Range 1	20–30%	70%	-2.0
Sadness Range 2	10–20%	40%	-4.0
Sadness Range 3	0–10%	20%	-6.0

I will assume that any retirement package chosen will work reasonably well for the first 10 years or so. Starting in year 11, the retiree will accumulate happiness or distress (negative happiness) units, according to the probability that they are still alive. My base-case mortality scale is 0.75 percent in year 1, increasing by 10 percent a year after that. The desired withdrawal benefit, representing the retiree’s income need to live comfortably (beyond Social Security and any other planned outside income),

is 4.5 percent of that initial fund, until death. That is, given a \$1 million nest egg:

Fund for retirement: \$1,000,000

Income need: \$45,000

Starting in year 11, a neutral (i.e., neither happy nor particularly distressed) situation is a liquid fund between 30 percent and 75 percent of the amount initially invested. (A retiree expects to spend down their fund over time, but there’s still a reasonable amount for future needs.) If the fund is instead at 76 percent or more of the initial amount, then happiness points are accumulated each year that remains true, as shown in Table 1—the more the happier.

Distress points occur if the fund drops below 30 percent of the initial amount, again as shown in the table. Half of the distress score is due to their liquid fund approaching \$0, and the other half is because they reduce the withdrawal they are living on. One can of course quibble with my “happiness” formula; but I would suggest that, indisputably, any retiree’s stress and distress in a bad scenario will begin long before their fund equals \$0.

We now have the tools to look at a case study. I will assume a lognormal equity/income fund (Mu = 7 percent, Sigma = 12 percent, total fund expenses = 1.75 percent), a lognormal bond fund correlated at -21 percent with the equity fund (Mu = 4 percent, Sigma = 5 percent, total fund expenses 1.00 percent), and a SPIA that is calculated with mortality and yield in line with all of the above, ending up with a guaranteed annual payout of about 6.75 percent of premium.

“HAPPINESS” CASE STUDY

If we accept the happiness paradigm just proposed, then we are ready to investigate potential solutions. One possibility, rarely if ever used lately, is what I’d call the “dance with the one that brung me” approach to retirement. In other words, if the yield premium that I got over time from investing in pure equities led me to a very nice retirement nest egg, then it will logically lead to a very nice retirement. Of course, this will be quite true in good scenarios, but when I tested this over 100 random scenarios for 50 years, the outcome was very different (Table 2)

Table 2  
Equity-Only Investing Happiness Results

Percentile	Happiness Score
90th	30.71
80th	25.49
Average	7.77
20th	-11.63
10th	-26.86
5th	-40.60

Now, it shouldn’t be surprising that the upper tails and even the average result are nicely happy ones. The problem with looking at the average, or “expected” result, as I still remember learning as a youngster around 2003 (who had held a lot in equities since the 1990s), is that you don’t get an average life—you get one life—one scenario. In the accumulation phase, I of course could hope that the Bear is followed by the Bull. For me, it indeed was. However, during decumulation, most of us are familiar with the sequence-of-returns risk that can lead to many a nest egg’s demise. This risk caused most of the nasty results in Table 2.

It should also not be a surprise that investing purely in a bond fund with a low expected return is a very poor strategy for someone needing income well above “Mu.” However, mixing a holding (say, 50/50) between equities and bonds that have a decent negative correlation, is much better, as shown in Table 3.

Table 3  
50/50 Mix Happiness Results

Percentile	Happiness Score
90th	16.95
80th	13.83
Average	6.55
20th	-3.07
10th	-10.24
5th	-18.14

I daresay that to most retirees, the risk/reward trade-off here is **much** better than before. But a retirement that ends very sadly is still a strong possibility.

A common alternative “income + growth potential strategy” nowadays is to buy a variable annuity and add a GLWB benefit. I’ve created one for this study, which guarantees the 4.5 percent income needed for life, for a fee of 1 percent per annum, while allowing up to a 70 percent equity holding. That strategy would seem to be a slam dunk, right? Not so fast! Table 4 shows the happiness scores for that strategy.

Table 4  
Variable Annuity GLWB Happiness Results

Percentile	Happiness Score
90th	17.90
80th	13.80
Average	3.89
20th	-10.35
10th	-14.80
5th	-18.79

The scores here are almost uniformly worse than those of the 50/50 equity/bond mix. And here’s the shocking thing about that: By my own rules, I’ve cut the negative scores for fund reduction in half (–1 through –3, instead of –2 through –6) because the 4.5 percent income piece can never go away. Why such tail sadness?

The problem with this strategy, from the perspective of “happiness” (as opposed to just “not outliving one’s income”) is that the withdrawals plus the rider fees cause the pot of liquid money to evaporate more quickly, more often, than any non-rider strategy does. Thus, the retiree does have a guaranteed income, but quite often, also ends up with the “fixed income plus nothing” result that seniors so dread.

I should hasten to add that, as I said up front, there’s nothing wrong with using a GLWB in place of a SPIA, if the rates are better. It just shouldn’t exist within the same vehicle as the one used to accumulate or maintain a fund of liquid assets.

This is where a “liquid money plus SPIA” strategy can work real retirement magic. Let’s say that a retiree puts 60 percent of their \$1 million into a SPIA on the day they retire and proportions what is left into 65 percent equity and 35 percent bond. Since the SPIA covers only about 90 percent of the \$45,000 income need, the reduced-fund negative scores become –3.3, –2.2 and –1.1. The “happiness” scores are shown in Table 5.

Table 5  
SPIA-Based Strategy Happiness Results

Percentile	Happiness Score
90th	14.22
80th	12.13
Average	6.92
20th	1.30
10th	0.09
5th	0.00

The average result is almost as good as in a 100 percent equity portfolio and better than any other strategy tested. There’s still a reasonable chance to outperform “average,” but the potential for retirement “sadness” is muted to practically nothing.

### WHAT IS THE SECRET SAUCE?

The thing that seems counterintuitive—almost magical—about the SPIA-based strategy, is this: The pot of liquid money for this retiree starts at only \$400,000 after the SPIA is purchased, and a minimum of \$750,000 in the fund is required for any positive “happiness” score. And yet, there we are—the lion’s share of economic scenarios result in quite a good happiness score.

The explanation is that the SPIA gives the retiree something almost more valuable than longevity protection—it eliminates

most of the market-timing risk that bedevils many retirement plans.

Another way to say this is that the SPIA’s **value** is negatively correlated in a retirement plan, not only with longevity risk, but also with equity-market risk. The SPIA’s value to the retiree is greater, in a sense, in poor or high-risk equity scenarios than in good or tame ones.

With this particular SPIA covering about 90 percent of the retiree’s income need, the \$4,500 that must be drawn from the liquid fund each month is fairly trivial, and given enough time, this almost ensures that an equity/bond mix grows nicely.

### CONCLUSION

A couple final thoughts show just how strong our “happiness hedge” is. On the one hand, if you reduce mortality by, say, 10 percent across the board, most of the strategies in this article show a “happiness” increase in good equity scenarios, but a sharp decrease in the poor ones. The SPIA strategy parallels the increase, but not the decrease. This has great “happiness” value! When I consider my own retirement, the last thing I’d want is to go for a checkup, be told, “Mr. Robbins, you’re in great health,” and my gut reaction to be, “Gulp ...” How much nicer to hear that and be able to only think of added years of enjoyment with my family!

On the other hand, no one really knows whether equity markets might be a bit overvalued just as they retire. What if my assumed equity “Mu” were to be reduced by 10 percent? For most strategies, this produces a sharp decrease in “happiness” in all scenarios. But with the SPIA, the decrease in happiness is really only felt in the good scenarios. In poor scenarios, my retirement, which was already more or less neutral in terms of “happiness,” is not affected in any significant way—the income bedrock ensures that.

The particular equity/bond/SPIA solution shown here is tailored to a specific situation—not “one size fits all”—but I’m confident that some solution containing guaranteed income will have a similar effect for almost any senior. It just needs to be worked out, based on the retiree’s desires.

Of course, in our world, no financial plan can be perfect, but the inclusion of some form of guaranteed income is a great way for retirees to vastly increase the likelihood that they will be “financially happy” for as long as they are blessed to live. ■



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