From the Desk of

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Life Expectancy and Rates of Returns: Is Life Insurance a Good Asset?

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During the recent Association for Advanced Life Underwriting (AALU) Meeting in Washington DC, Christian Kaplan, CFA, VP - Specialty Markets at AXA, presented a very interesting argument for including life insurance as an asset class in a long-term investment portfolio. All credit and thought leadership on this topic go to Mr. Kaplan. For those of you who like math or are statistics "geeks" like me, you will likely want to read more about this. For those of you less mathematically inclined and noting that this is a heady subject, I will attempt to make this as simple as possible.

AgencyONE runs hundreds of life insurance illustrations every week and, more often than not, we are asked the following question: "What is the policy Internal Rate of Return?" – meaning, the return of the amount invested in premiums (negative cash flows) to the eventual death benefit received (positive cash flows). It is a logical question but what we are really being asked is the following: "Is life insurance is a good investment?" Generally, my response is dependent upon answers to two additional questions:

1. A "good investment" compared to what? and
2. When will the insured die?

The Internal Rate of Return page of a life insurance illustration looks something like this with the blue line (age 84) indicating the life expectancy:

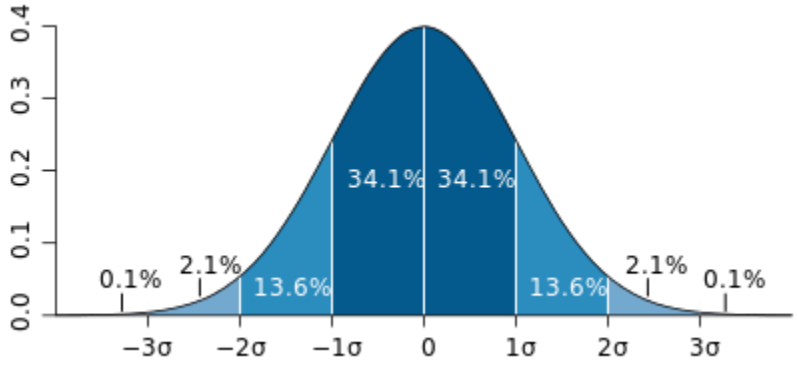
	Policy Year	Age	Annual After Tax Outlay	Net Cash Surr Value	Net Death Benefit	IRR on Net Death Benefit	Taxable Equivalent IRR on Net Death Benefit	Probability of Death
	26	76	9,344	245,690	1,000,000	9.31%	15.51%	29.79%
	27	77	9,344	257,687	1,000,000	8.74%	14.56%	32.88%
	28	78	9,344	269,246	1,000,000	8.22%	13.69%	36.17%
	29	79	9,344	280,323	1,000,000	7.74%	12.90%	39.64%
	30	80	9,344	291,247	1,000,000	7.30%	12.17%	43.32%
	31	81	9,344	301,452	1,000,000	6.90%	11.49%	47.16%
	32	82	9,344	310,761	1,000,000	6.52%	10.87%	51.17%
	33	83	9,344	318,783	1,000,000	6.18%	10.29%	55.28%
*	34	84	9,344	325,140	1,000,000	5.85%	9.76%	59.44%
	35	85	9,344	329,464	1,000,000	5.55%	9.26%	63.62%
	36	86	9,344	330,970	1,000,000	5.27%	8.79%	67.77%
	37	87	9,344	330,305	1,000,000	5.01%	8.35%	71.84%
	38	88	9,344	326,857	1,000,000	4.77%	7.95%	75.78%
	39	89	9,344	320,244	1,000,000	4.54%	7.56%	79.51%
	40	90	9,344	309,662	1,000,000	4.32%	7.20%	82.98%
	41	91	9,344	294,417	1,000,000	4.12%	6.87%	86.13%
	42	92	9,344	274,217	1,000,000	3.93%	6.55%	88.90%
	43	93	9,344	240,476	1,000,000	3.75%	6.25%	91.29%
	44	94	9,344	195,458	1,000,000	3.58%	5.96%	93.31%
	45	95	9,344	135,090	1,000,000	3.42%	5.70%	94.98%
	46	96	9,344	55,553	1,000,000	3.26%	5.44%	96.32%
	47	97	9,344	54,610	1,000,000	3.12%	5.20%	97.36%
	48	98	9,344	53,606	1,000,000	2.98%	4.97%	98.16%
	49	99	9,344	52,539	1,000,000	2.85%	4.75%	98.75%
	50	100	9,344	51,403	1,000,000	2.73%	4.55%	99.17%

The answer to the question of whether life insurance is a good investment is "**maybe**". In the above example, the IRR on net death benefit is 5.85%. This is based on annual premiums of $9,344 on a Male age 50 at Standard Plus Non-Tobacco rates and a death benefit of $1,000,000 received at age 84, which is the calculated Life Expectancy using the Society of Actuaries Valuation Basic Table (VBT) from 2008. The problem with this answer is that "Life Expectancy" (the average period that a person may expect to live) simply means that 50% of the people will die before age 84 and 50% of the people will die after 84.

The reason for saying "maybe" is obvious. The insured could die sooner or later and when death occurs will change the cash flows and, by consequence, the Internal Rate of Return.

To have a better sense of the true value of life insurance as an asset class, Mr. Kaplan argues that one must dive into some rather complicated statistical analysis, which I will spare you from in this ONEIdea. In summary however, one must calculate the "Expected Rate of Return" which considers the likelihood of the insured passing away before or after LE. To do that, a mathematic calculation needs to occur around the probability of mortality and its impact on the standard deviation of returns.

You may recall from your college days the famous bell curve. Statistics tell you that 68.2% of all data points lie plus or minus 1 standard deviation from the mean as reflected in the bell curve below.



If you apply this logic to a mortality curve (life expectancy) this means that 68.2% of people will die (in our example) between the ages of 74 and 94. Further math determines that the arithmetic mean of the returns during that period is 6.08% with a standard deviation from the mean at 1.89%. Therefore, we can comfortably conclude, that there is a high probability, greater than two-thirds, that the returns will be between 4.19% and 7.97%.

A very important note is that this analysis does not factor in policy return variations (my example uses an IUL run at 5%), carrier default risk, or policy cost changes of carrier product. With that said, it is important to note that with a guarantee provision in a contract and a highly rated carrier, much of this risk is reduced dramatically.

So now we return to the original question, "is life insurance a good investment?" and again I would ask, "compared to what?"

Life insurance proceeds are completely uncorrelated to other capital markets, 100% liquid for face value and paid in cash at the time of death. Furthermore, consider that life insurance proceeds are income tax free, which means that in a 40% income tax rate, the returns expectation, 68.2% of the time in our example, would be between 6.98% and 13.28%. This seems like a very attractive asset class to me.

Portfolio managers, however, would prefer to get into a discussion of expected portfolio returns, risk free rates and portfolio standard deviations to calculate a Sharpe Ratio and then compare life insurance to other asset classes such as stocks and bonds or a portfolio of a mix of stocks and bonds. The Sharpe Ratio is a measure of the risk-adjusted return and has become the industry standard for this calculation. The Sharpe Ratio, developed by Nobel laureate William F. Sharpe, is the average return earned in excess of the risk-free rate per unit of volatility or total risk. The higher the Sharpe Ratio, the more attractive the risk-adjusted return.

So, let's assume we are now speaking with portfolio managers and talk about Sharpe Ratio and life insurance. If we assume that the Expected Rate of Return (after taxes) at Life Expectancy is 5.85% (as per the illustration provided) and that the

Risk-Free Rate as measured by the 10 Year Treasury is 2.4%, using the standard deviation previously calculated (1.89%), the Sharpe Ratio of Life Insurance is 1.82.

By comparison, the proxy for the stock market is the SPY (SPDR S&P500 ETF) which has a Sharpe Ratio of .51 and the proxy for the bond market is the LQD (iShares IBoxx $ Inv Grade Corp Bonds) which has a Sharpe Ratio of .68.
Now let's bring this statistics and finance class to closure. Bottom line – what does all this mean? How is the Sharpe Ratio affected in scenarios that do and do not include life insurance? Consider a client with the following two asset allocation options:

1. A portfolio of 70% stocks and 30% bonds; and
2. A portfolio of 50% stocks, 25% bonds and 25% permanent life insurance.

The estimated Sharpe Ratio for Portfolio 1 is **.56** versus Portfolio 2 which is **.88**. Portfolio 2 has a markedly improved Sharpe Ratio – 57% higher. By including life insurance as an asset class in the portfolio, the investment manager NOW has a means to improve risk adjusted returns!

For the client interested in managing an investment portfolio for wealth transfer purposes and with an appropriate time horizon, life insurance should have a seat at the portfolio management table as an asset class.

Call AgencyONE's Marketing Department at 301.803.7500 for more information or to discuss a case!