STRESS TEST YOUR LIFE INSURANCE & AVOID THE ATTRACTIVE IMPOSSIBILITY

by Gordon Schaller and Dick Weber

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"Properly designed and managed life insurance is unique in its ability to deliver cash when it is needed the most. As life insurance has evolved over the last 30 years there has been much confusion about the difference between guaranteed, contractual policy provisions and the appearance of a substantially more aggressive "promise" through an accompanying illustration. This often yields the "attractive impossibility."

"The technology exists for understanding the probability of a life insurance policy delivering on a client's expectations. Monte Carlo analysis can be used to measure the likelihood of policy failure, at the inception of the policy or anytime during its life. It should be adopted by carriers and agents as a tool to stress test existing policies and to avoid new policies that promise only "an attractive impossibility" rather than "a less attractive probability."

Now, Dick Weber and Gordon Schaller provide members with their thoughts on stress-testing life insurance using Monte Carlo analysis.

As they point out in their commentary, tradition, regulation and the illustration systems available from carriers force universal, variable universal, and equity index universal life policy illustrations to be out of sync with "reality" - in other words - the type of volatility seen in virtually all asset classes over the last 10 years. The use of average rates of return to calculate values and/or funding premiums often disguises the negative effect of precipitously increasing net amounts at risk at older ages.

Here is their commentary:

EXECUTIVE SUMMARY

The life insurance industry has utilized technology over the last 30 years to create new and hybrid products. Universal life and variable universal life are two such products which have substantially replaced whole life as the sales leaders.

Computers have enabled the designers of these policies to create "flexible premiums" and also permit the cash value in VUL policies to be invested in a wide array of investments. Volatile financial markets and negative returns have highlighted a major design risk in variable universal life: negative investment returns coupled with increasing mortality costs as insureds age.

This can force a policy into a death spiral from which it may not recover. Monte Carlo analysis can be used to measure the likelihood of policy failure, at the inception of the policy or anytime during its life.

FACTS

The experience of buying life insurance can present mixed emotions. We would rather not acknowledge our need for something that

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reminds us of our mortality, yet it is the only way to assure that our families, businesses, charities and others to whom we would like to make a specific bequest receive a liquid asset that is not subject to income tax.

If properly arranged, it is also free from estate taxes. Policy proceeds are often beyond the reach of creditors. Life insurance can be relatively low-cost when you are young, but can appear quite expensive if acquired when you are older. Most people who purchase life insurance rely on their financial advisors to design the product to meet their objectives with a high degree of certainty.

HISTORY OF LIFE INSURANCE PRODUCT DESIGN

When our parents bought life insurance, it was generally to create funds to provide income in the event the “bread winner” died prematurely. The policy choices were relatively simple: term insurance or whole life insurance.

Term insurance had a premium that was “cheap” at the time of purchase, but got progressively more expensive as the “odds of dying” increased each year. Whole life insurance used a level and guaranteed premium that was “expensive” at the outset, but designed to last a lifetime without becoming unaffordable when you were likely to need it. Trillions of dollars of both types of insurance were bought - and paid death benefits - in the 20th century.

However, the life insurance industry was both blessed and cursed by technology that has generally transformed all of the financial services segments into a financial colossus with far too many product choices and far too little information about their benefits and risks. In the late 1970s, one of the first new life insurance products emerged, so-called flexible or indeterminate premium (soon better known as "universal life") policies.

Shortly after it was introduced, universal life began to garner a substantial market share. Universal life products seemed simple: pay an initial premium into the policy, and after sales and term insurance charges and some other expense items, the balance of the premium went into a “cash value” account which earned a current rate of return (crediting rate) declared by the insurance company.

Each month the insurance company's computer would credit any new payments from the policy owner, credit income earned in the last month, debit expenses, debit insurance (mortality) charges and the result was the account value. The crediting rates were typically guaranteed to be no less than 4%, but as long-term bond yields reached 15% in the early 1980's, current policy crediting rates often reached 12-14%. Universal life seemed as simple as a bank book and appeared to have significantly lower annual premiums compared to whole life policies.

However, the long-term ability of a universal life policy to remain effective past life expectancy was based on the ultimate balance of these credit and debits. When crediting rates were high, this seemed obvious. Of course, a 12-14% crediting rate wasn’t guaranteed, and within a decade the average crediting rate was in the 7-

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8% range (similar to the 10-year U.S. Treasury Bond which tracked closely the crediting rate).

Such scenarios highlighted the fact that "premiums" that had been calculated with the computerized illustration systems were not guaranteed - only the underlying minimum crediting rate was guaranteed. Use of the word “premium” was potentially misleading, suggesting that if you pay a premium, as in whole life, the policy is guaranteed in all respects.[1] Such a calculated premium would have to increase significantly years later if actual crediting rates were substantially lower than the illustrated crediting rates. The low illustrated "premiums" demonstrated that consumers "…are drawn to the attractive impossibility versus the less attractive probability."[2]

METAMORPHOSIS: VARIABLE UNIVERSAL LIFE

As interest rates began their long decline from the early 1980s through the early 2000s, traditional universal life sales declined. In response to a robust stock market, variable universal life became the next "big thing" in life insurance.

As with universal policies, variable universal life allowed the owner to choose a “premium” and uniquely also control the investment of the net account value. This created an opportunity to capitalize on equity returns, which had significantly out-performed the fixed returns underlying whole life and universal life policies.[3]

The “rising tide lifts all ships” stock market environment of the 1990s, obscured an important technical issue in life insurance. The death benefit is comprised of two parts: the accumulating cash value and the commensurately declining “net amount at risk.” Net amount at risk equals the stated death benefit, minus cash value throughout the policy duration.

Level premium whole life insurance was designed to affordably manage disastrously high risk charges at older ages by reducing the net amount at risk. Thus, increasing cash values and correspondingly decreasing net amounts at risk allowed a policy to affordably sustain to the death of the insured.

Traditional universal life at least had an assurance of some guaranteed minimum return. However, variable universal life introduced an unforeseen consequence - negative growth in the form of the inevitable “downs” of the stock market.

POLICY ILLUSTRATIONS

Universal and variable universal life product development would not have been possible to design - or sell - without the personal computer. In turn, it was the development of the variable universal life policy that finally demonstrated what can be an enormous difference between policy illustrations and actual policy performance.

The purpose of any policy illustration is to help the purchaser understand how the policy works, and to be able to distinguish between what is guaranteed and not guaranteed, including the premium.[4] With universal life policies, the

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premium has to be estimated based on certain assumptions regarding average interest crediting rates (always projected as constant, not undulating, returns) and the expected cost of insurance charges.

Investment account volatility periodically produces negative returns, reducing the cash value of a variable universal policy and, simultaneously increasing the net amount at risk. This technical issue is important to variable policies during the insured's younger ages of 25 - 60, but is absolutely critical at older ages when increasing net amounts at risk - exposed to increasingly higher costs of insurance - can create a fast-acting, negative domino effect.

If the cash value declines 20% due to falling market values, the net amount at risk has to compensate. The reduced cash value will be debited for increasing insurance charges, further reducing the cash value and further exacerbating the negative spiral. Subsequent monthly investment returns - even if robust - will rarely be sufficient to stem the tide at older ages.

Technology has created a dilemma for modern universal life insurance policies. Computers can account for daily investment fluctuations and monthly accounting of policy debits and credits, but policy illustrations, including in-force illustrations, are woefully constrained by tradition and regulation to projecting a constant return assumption (not to exceed 12% for VUL and not to exceed the current rate for UL) as far into the future as the client's age 100 or more.

Similarly, scales of anticipated future insurance charges are projected into a distant future that may not support the experience of the previously sold policies. Thus, when policy illustration systems are used to calculate non-guaranteed premiums, the illustration of average rates of return (and scales of future insurance charges) disguises the potentially destructive reality of fluctuating account and net amount at risk values.

Fortunately, technology also offers a better way to visualize how variable universal policies work and to establish an initial premium funding level that is more realistic, than that calculated by a conventional illustration system. This yields a more realistic starting point from which the advisor and client can then manage over the many years the policy is likely to remain in force.

MONTE CARLO ANALYSIS

Statistical analysis can help determine the probability that a variable universal life policy will fulfill the client's expectations. This is done by comparing the conventional constant performance illustration with a random application of actual, volatile monthly returns of the last 50 or more years (a "Monte Carlo" analysis).

A simple example of Monte Carlo analysis takes the 600 monthly returns underlying the last 50 years (the number of years could be less or more based on a client's age) in the chosen asset allocation and applies them in a random order to each month the policy will be in effect to age 100. This yields one possible policy

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performance outcome - did the policy sustain to age 100 at a given "premium"?

Now, repeat this process 1000 times (less than 20 seconds with a modern personal computer). This process produces a certain number of randomly calculated hypothetical illustrations in which the policy sustains to age 100; the remaining number of randomly calculated illustrations do not sustain to age 100.

Suppose the result was 450 successful and 550 unsuccessful outcomes. Is a 45% chance that the policy will pay the death benefit as expected by the insured acceptable? Virtually all clients would say "no." What is the minimum acceptable likelihood that the life insurance will do what was intended - pay the death benefit? Many would require as much as a 90% success ratio. Reversing this approach, we can then determine the required "premium" either when the policy is acquired, or while it is in force, to achieve the desired 90% required success ratio.

COMMENT

Properly designed and managed life insurance is unique in its ability to deliver cash when it is needed the most. As life insurance has evolved over the last 30 years there has been much confusion about the difference between guaranteed, contractual policy provisions and the appearance of a substantially more aggressive “promise” through an accompanying illustration. This often yields the "attractive impossibility."

Purchasers of life insurance for life-long needs have been confused with an array of product choices that are not analyzed in comparison with the policy owner’s insurance style. Insurance style is closely analogous to investment style, where an investor determines his or her risk tolerance, timeframes, risk/reward sensitivities, and basic asset allocation. An individual in her late 60s is unlikely to be as aggressive in her investment portfolio as her 40-year old daughter, and the type of life insurance policy she buys for estate planning purposes is unlikely to meet her needs and sensitivities if it requires undue, and often underappreciated, risk.

A FINAL NOTE: RECONCILING CONVENTIONAL ILLUSTRATIONS WITH REALITY

Tradition, regulation and the illustration systems available from carriers force universal, variable universal, and equity index universal life policy illustrations to be out of sync with "reality" - in other words - the type of volatility seen in virtually all asset classes over the last 10 years.

The use of average rates of return to calculate values and/or funding premiums disguises the negative effect of precipitously increasing net amounts at risk at older ages.

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carriers and agents as a tool to stress test existing policies and to avoid new policies that promise only "an attractive impossibility" rather than "a less attractive probability."

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[1] The use of the term “premium” in illustrations was not directly attributable to the insurance industry. Regulators, concerned that these policies would be sold as investments, mandated the use of the term “premium” even though the amount paid into the policy was a guess based on the assumption that current factors - especially interest rates and insurance charge schedules - would remain unchanged for the next 40, 50 or 60 years.

[2] To paraphrase Aristotle's Rhetoric.

[3] From 1926 through 2006, total equity returns of Large Cap stocks (comparable to the S&P500) reflected a 10.4% compound annual rate of return contrasted to a 5.5% compound annual return for long-term U. S. Government Bonds. **Ibbotson** *2006 Stocks, Bonds, Bills & Inflation (SBBI) Yearbook (Valuation Edition)*

[4] Introduction to National Association of Insurance Commissioners (NAIC) Model Policy Illustration Regulations adopted December 1996 and promulgated to the 50 State Departments of Insurance. By early 2000, all states had adopted illustration regulations largely similar to the Model.