THE art OF THE deal.

Pricing Life Settlements

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THERE ARE THREE BASIC METHODS for determining the economic value of life settlement contracts from the provider's perspective. Two of these methods, *deterministic* and *probabilistic*, are commonly used in the industry today. The third approach, *stochastic simulation*, is rarely used, but its advantages may lead to wider use as the life settlement market evolves.

This discussion of pricing methods focuses on universal life contracts, which currently represent the majority of potential life settlement policy purchases. Universal life contracts are attractive to life settlement providers because they offer permanent insurance for a relatively low cost (when compared with whole life) and provide a high degree of flexibility for managing premium payments.

Background

Life settlements are life insurance transactions consummated in the secondary market. They involve two main parties—a life insurance policyowner and a life settlement provider. In the transaction, the policyowner transfers ownership rights of the policy to the provider for an agreed-upon monetary consideration. Most life settlement candidates fit a general risk profile: They're often age 60 or older, wealthy, impaired risk but not terminally ill. These individuals have usually experienced a downturn in health since originally being insured. Often over-insured, they're frequently looking to sell existing policies they no longer need for financial or estate planning purposes.

Upon the transfer of ownership, the provider is designated as the beneficiary. In its role as the new owner and beneficiary, the provider is responsible for premium payments to keep the policy in force and retains the right to collect any future policy benefits, including dividends, excess interest credits, persistency bonuses, death benefits, and maturity benefits.

In the growing life settlements market, providers purchase life insurance policies from impaired or elderly policyholders. Key considerations are the mechanisms and approaches used to quantify the economics of such a transaction.

Key Pricing Components

The agreed-upon price at which the life settlement transaction occurs is a function of a number of factors. Typically, the potential provider analyzes the specifics of a given case and then produces an offer the policyowner can accept or reject. The key levers of life settlement pricing can be categorized into four main groups—policy costs, policy benefits, insured's life expectancy/mortality, and the provider's expected return on investment (generally a function of the provider's cost of capital, risk tolerance, and expenses). These groups are further delineated in the table on Page 36.

Regardless of the particular methodology selected, the economic value of a life settlement contract to a provider will be derived from the expectation of future policy benefits, less the expectation of future policy costs. The present value of the policy cash flows is then calculated using the provider's expected return on investment to determine the gross economic value of the life settlement contract.

The final amount offered to the policyowner will further depend on provider expenses, taxes, and other costs deducted from the gross value. The primary difference among pricing approaches is in the application of mortality (life expectancy) and interest discounts (expected return on investment) to the policy values when determining the gross value.

The Importance of Policy Underwriting

Most pricing approaches begin with a projection of future policy costs. With universal life contracts, the costs and benefits may be difficult to assess due to their numerous components and highly flexible structure. Therefore, each of the unique policy elements must be accurately quantified.

For most life settlement providers, this responsibility lies with the policy underwriting department. The policy underwriting staff is charged not only with the task of gathering policy values but also interpreting contract and illustration language to ensure that no potential costs or benefits are overlooked during pricing.

The complex nature and wide variety of life insurance policy structures dictates that the ideal policy underwriting staff should comprise skilled analysts with considerable insurance knowledge. A collection of insurance expertise from key areas such as policy administration and servicing, and product development (actuarial calculations and illustrations) will help the life settlement provider more accurately predict future policy values and avoid costly pricing errors.

Once policy values are determined, the next step is to select an approach for applying mortality and interest discounts to calculate a life settlement offer amount.

The Deterministic Method

In the early years of the life settlement industry, the standard for pricing was the deterministic method. This was likely an outgrowth of the use of this method in the viatical settlement industry where future lifetimes were expected to be shorter and more predictable due to the terminal health conditions of the insureds.

The deterministic method is built on the premise that the death benefit for a life settlement contract will be collected by the provider at a specific time. Deterministic pricing frequently involves an indemnification-type reinsurance arrangement that determines the timing of the death benefit payment. This

Policy Costs	Policy Benefits	Life Expectancy/ Mortality	Expected Return on Investment
Cost of insurance	Dividends	Mean expectation of future lifetime	Cost of capital
Policy loads (per policy, % of premium, per $1,000)	Interest credits and bonuses	Annual or monthly mortality rates	Risk margin
Required premiums (i.e., term insurance, whole life, UL secondary guarantees)	Death and maturity benefits	Distribution/standard deviation of expected future lifetime	Expenses

type of arrangement typically assumes that the reinsurer will pay the death benefit to the provider at the mean life expectancy or some specified period beyond the mean life expectancy, typically two years or more.

In the absence of reinsurance, the assumption may be that the death benefit is collected even later. The provider pays projected premiums until the death benefit is collected. The total amount available to purchase the life settlement and cover all expenses is the discounted value of the death benefit, less the discounted value of the premiums, where the discount rate is the provider's expected return on investment.

The advantages of the deterministic method are its relative simplicity of implementation and ease of understanding. The method depends on the law of large numbers in order to realize deaths occurring, on average, at or near the mean life expectancy. This means that the pricing of an individual life settlement transaction depends on the purchase (currently or in the near future) of a sufficiently large number of homogeneous contracts with identical mortality risk.

In practice, this may never occur because policies and insured risk profiles vary widely. However, a sufficiently large portfolio of heterogeneous contracts can mitigate a portion of this risk. This method's major shortcoming is that it ignores the distribution of deaths that occur about the mean life expectancy. It therefore fails to recognize the potential for early deaths to fund premiums for persisting contracts, as well as the risk that lives that persist beyond the mean life expectancy may generate increased premium costs and perhaps interest expense.

The Probabilistic Method

Probabilistic pricing is the new standard for the life settlement industry. In contrast to the deterministic method, the probabilistic method doesn't depend on all deaths occurring at a single time. The probabilistic method treats the insured and policy being evaluated as a collection of identical insureds and policies. Future mortality rates are projected based on the insured's risk characteristics (age, gender, and underwriting classification) and mean life expectancy. These projected mortality rates are applied to the projected premiums, benefits, and expenses to create mortality-adjusted net cash flows. Discounting these cash flows at a specified interest rate results in an actuarial net present value of the life settlement contract.

As with the deterministic method, the probabilistic approach to pricing depends on the law of large numbers to realize the predicted pattern of deaths. It often provides a competitive pricing advantage over the deterministic method by recognizing that some deaths will occur before the mean life expectancy (assuming all other factors are equal). It also balances the benefit of early deaths by identifying the risk of deaths occurring after the mean life expectancy.

Method	Advantages	Disadvantages
Deterministic	► Simple ► Easy to implement ► Usually the most conservative approach	► Dependent upon law of large numbers ► Ignores distribution of life expectancy ► Does not effectively recognize cost/benefit of reinsurance arrangements
Probabilistic	► Recognizes distribution of life expectancy ► Consistent with life insurer pricing techniques ► Can incorporate mortality improvement, flat extras, etc., to better reflect mortality distribution risk ► Well-suited to reflect reinsurance arrangements	► Dependent upon law of large numbers ► Can be too aggressive if mortality assumption is not appropriate
Stochastic simulation	► Most powerful and flexible of the three methods ► Incorporates all the advantages of the probabilistic approach ► Can be used to value alternative reinsurance options ► May be useful in determining expense allocations, setting premium reserves, or assessing funding needs ► Best if used in combination with probabilistic method	► Most complex and difficult method to implement ► More suited to portfolio analysis than individual life settlements ► Limited use for portfolio analysis until sufficient size is reached

Finally, the probabilistic method is consistent with methods used by insurance carriers to develop future mortality projections for determining life insurance prices. The primary disadvantages of the probabilistic method are its higher level of modeling complexity and greater difficulty in explaining the method to those outside the life insurance industry.

Stochastic Simulation

Though this method isn't widely used in the life settlement industry, we believe that as the market matures and life settlement portfolios reach critical mass, stochastic simulation will become an invaluable tool for providers to price life settlement contracts, perform periodic valuation on existing portfolios, structure financing for future purchases, and establish appropriate premium reserves and expense allocations.

Stochastic simulation involves the use of Monte Carlo simulation techniques to predict future patterns of deaths for life settlement contracts. In general terms, the method uses a series of random numbers for each of the specified trials for each life settlement contract. For a single trial, the random numbers are compared with the projected mortality rates to determine the first period in which the random number is less than or equal to the predicted mortality rate. At this point, a death is assumed to occur for that trial.

Using these modeled results, cash flows can be reprojected for the selected life settlement contract, assuming premiums are paid until the simulated death occurs and the death benefits are collected. By summing the cash flows across all life settlement contracts within a specific trial, a single Monte Carlo trial for the entire portfolio is created. As the number of trials is expanded, discernible patterns of cash flow begin to emerge for the portfolio.

The collection of portfolio trials can be used for a wide range of analysis, including forecasts of expected earnings and determination of loss risk.

The stochastic simulation method's greatest advantage over other pricing methods is that it mitigates the dependence on the law of large numbers to produce meaningful results. It also allows for extensive analysis of different funding and expense structures. The primary disadvantages of the stochastic simulation method, however, are the need for critical portfolio mass and the higher level of complexity relative to the deterministic and probabilistic methods.

Reinsurance

Indemnity-type reinsurance arrangements are frequently used in the life settlement industry today. Providers may seek to engage in these types of reinsurance arrangements in order to remove tail risk—the risk of the insurance paying off later than expected.

As with any reinsurance arrangement, this assumes that the reinsurer is still financially viable at the time the contract comes due. The basic arrangement involves an initial fee—usually structured as a percentage of the face amount being purchased—paid by the provider to a reinsurer. In exchange for this consideration the reinsurer agrees to indemnify the provider for the death benefit if the policy is still in force at some predetermined future time.

Common arrangements define reinsurance premiums as 3

percent to 5 percent of the net death benefit for indemnification at life expectancy, plus two years. The determination of life expectancy in this type of arrangement is often modified from the standard actuarial definition in order to better match the reinsurer's risk tolerance.

While the actuarial mean life expectancy usually falls near the 50th percentile of predicted deaths, life expectancy for reinsurance purposes may often be defined as the point at which a higher number of deaths are expected, such as the 80th or 85th percentile. This provides an added measure of protection for the reinsurer by delaying the indemnification point and reducing the amount of tail risk assumed.

Only a handful of financial institutions currently participate in the life settlement industry as reinsurers. It's reasonable to assume that as the industry grows, so will the need for reinsurance partners and more creative reinsurance arrangements.

Reinsurance can be reflected in life settlement pricing under any of the three previously described methods. The deterministic method, by definition, is structured as an indemnity-type arrangement that doesn't recognize tail risk. The only modifications for reinsurance under this method involve recognition of the initial cost of the reinsurance and possibly an adjustment to the timing of the death benefit. In many cases, this may actually reduce the value of the life settlement contract due to the added cost of the reinsurance fee.

The probabilistic method is better suited than the deterministic method for reflecting the value of reinsurance because it recognizes the impact of tail risk. Under the probabilistic method, death benefits are collected by providers according to the distribution of deaths associated with the mean life expectancy. Incorporation of an indemnity-type arrangement requires the deduction of the initial reinsurance fee from the probabilistic cash flows and termination of the future cash flows at the indemnification point (or attachment point) of the reinsurance arrangement. At this attachment point, all outstanding death benefits are collected and premium payments cease for the provider.

This has the effect of "forwarding" any death benefits in the tail of the projection to the attachment point. Due to differences in risk tolerances and capital costs between the provider and the reinsurer, the increased present value of these "forwarded" benefits may exceed the initial fee for the reinsurance and increase the value of the life settlement contract. Generally, though, the reduction of tail risk comes at a slight cost to the final life settlement value.

The stochastic simulation method can also be modified to incorporate indemnity-type reinsurance into the pricing of individual life settlement contacts. However, this method may prove most beneficial through its ability to assess the relative value to the provider of a given reinsurance arrangement. By reflecting the cost and benefit of a reinsurance arrangement in the simulation analysis, the provider can estimate how frequently the reinsurance arrangement will result in an increase or decrease in value to the life settlement contract. Through stochastic simulation, this can be done at both an individual contract level and for an entire portfolio of life settlement contracts.

Additional Considerations

Clearly, expected mortality, policy costs, and policy benefits are the driving factors behind life settlement pricing. There are, however, some additional items that shouldn't be overlooked when developing a pricing approach. The selection of a discount rate or internal rate of return plays a major role because it embodies the provider's cost of capital, risk margin, and expense levels. (The rate may also be used to adjust to competitive pressures in the marketplace.)

Expected mortality, policy costs and benefits, and the provider's expected return on investment are the driving factors behind life settlement pricing. For most life settlement providers today, the probabilistic approach is the most appropriate pricing method because it offers the best balance of consistency with accepted life insurance pricing methodology and ease of implementation. The deterministic method is easier to implement and understand, but it may put a provider at a competitive disadvantage while also overlooking some mortality risk.

While the stochastic approach is the most powerful, it may be better suited to portfolio-level cash flow analysis. As life settlement portfolios gain mass over the next few years, we believe that the industry will evolve to a combination of the probabilistic method for individual transaction pricing with stochastic simulation for portfolio valuation. ●

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