An Exploration of Mortality Risk Mitigation

NEMO PERERA AND LEVI PEARSON

Investors transacting in life settlement policies face many risks. Insurable interest risk (the risk that a life insurer will rescind a policy on grounds of lack of insurable interest) and contestability risk (the risk that a life insurer will decline to pay a death benefit because of either suicide or misrepresentation on the application) gained much notoriety in premium finance transactions when issuance protocols were called into question. But the most often raised concern from any life settlement investor surrounds extension risk, which is the probability that an insured individual lives well beyond his or her life expectancy.

The risk presents two problems: 1) that the death benefit arrives later but does not grow with time, and 2) that the ongoing premiums drain the investment returns.

Early pioneers of life settlements relied primarily on equity risk capital, drawing sources from hedge funds and high-net-worth individuals, thus placing all the investment at risk. Investors purchased underwriting reports and hired actuaries to construct mortality models that would estimate a person’s life expectancy, and provide a value on the said person’s insurance policy. While attracted to mortality events’ non-correlation to interest rates or stock market returns, investors were limited in capital deployment. Unable to draw from traditional bank lenders, the mortality risk was left open ended.

The possibility of someone living well beyond his estimated life expectancy gives pause to many potential investors, as it could result in negative returns or principal losses. And, at its most extreme, if the ongoing premium cannot be financed, it can result in a total loss.

While life settlement investors wish to access traditional lenders for lower borrowing costs, banks typically are not willing to lend to an unknown maturity. Some banks lend based on “market” values, but the secondary market for life settlements has limited liquidity and less transparency. However, with the consumer marketplace urging cash in their insurance policies, equity investors expanding the life settlement market may find emerging mortality solutions will bring bankers to the table.

Life settlement providers have relied primarily upon hedge funds for policy acquisition and financing. Those who employ premium finance lending have had to pledge substantial collateral in order to qualify for the loan. This collateral amount includes the insurance policy’s cash surrender value, plus additional cash or liquid marketable securities. The collateral requirement places a drag on equity returns, limiting policy acquisitions and making them very expensive. For a few premium finance lenders, the collateral requirements designate just the insurance policy itself, thereby justifying higher interest rates to reflect additional risk exposure to adverse market conditions. These high yields and collateral requirements have hindered both the life settlement market’s growth and the insured individual’s return.
Traditional fixed income lenders wishing to participate in this market are constrained in part by the mortality uncertainty. This creates an opportunity for new risk management tools that can at least partially transfer longevity risk and allow for more funding arrangements. This article will explore several solutions that mitigate the mortality uncertainty and enable the successful execution of financial transactions. By repositioning some traditional mortality products and applying innovative strategies, the life settlement market will benefit from more secure market players.

LIFE ANNUITY COMBINATIONS

A life settlement investor concerned with the mortality tail risk or longevity cannot employ traditional fixed income structures, which typically require conservative covenants, such as the timeliness of interest payments and the repayment of principal. To tackle these simple limitations, a new structure has evolved from standard-issue insurance products, which incorporates debt-like characteristics of principal protection while providing the necessary mortality hedge. It does this by combining a life-contingent single-premium immediate annuity (SPIA) with a settled life insurance policy. As shown in Exhibit 1, the special purpose vehicle (SPV) issues fixed income security notes, which apply the funds to purchase a pool of annuities and corresponding life settlement policies. The annuity product produces a periodic cash flow for the underlying annuitant's life, which generates enough income to supplement the life insurance premiums and the fixed income note holder's interest component. Therefore, the investment amount is principally protected by an investment-grade life insurance policy.

By combining a SPIA with a life policy, mortality risk is minimized by the matching of asset and liability with equal maturities. Also, to compensate for the possibility of early death, the structure produces an enhanced yield. It is important to note that, because the annuity cash flow is fixed, this structure is exposed to interest rate risk. Additionally, the annuity will eventually become taxable, creating a risk of insufficient funds to pay the life premium and interest.

The combination of these traditional insurance products creates a self-sustaining cash flow structure, without the need for additional collateral beyond the investment. This makes the structure ratable, and highly desirable to pension funds and high-yield asset managers.

EXHIBIT 1
Life-Contingent, Single-Premium Annuity Structure
RESIDUAL VALUE

Mortality risk is already marketed by life insurers and re-insurers through retail life insurance and annuity products. Pricing and underwriting standards will change with the growing senior markets, and the unwillingness of life insurance companies to participate in the life settlement market may hamper deployment of these traditional products. This has led to the development of other competing products that can help achieve similar results. A new competing mortality product measures the policy's economic value, based on mortality or life settlement expectations.

When considering traditional financing methods, banks extend capital based on at least two factors, credit and economic values. For asset-based financing, the underlying asset is pledged as collateral for the loan amount requested. In the case of a life settlement policy, traditional lenders have been reluctant to assume policy asset risk, mostly because of the unknown maturity. For this, banks typically request additional cash or assets to satisfy the difference between the premium-financed policy's cash surrender value and the amount borrowed, not considering the liquidity value of the underlying policy at all.

Lenders that do accept life settlement asset valuations charge a very high interest rate that disqualifies many potential insured individuals from even participating. Brokers who wish to share a diversification tool with their clients, using premium finance as an alternative, usually end up disappointed to learn about the many costs associated with those programs.

In order to make premium-finance programs more efficient using traditional lending, residual value insurance was developed to insure the policy's future value. Such coverage serves as a third-party guarantor, insuring that the life settlement policy's value being financed will exist at a future point in time. For traditional banks, life settlement lending now has a specified maturity and the asset value is guaranteed. At the same time, the borrower can access low-cost funds and, therefore, has a reduced hurdle rate.

To illustrate, we provide an example of a policy that outlines premium finance, and shows how the transaction economics can be improved with the use of residual value insurance. It is important to note that this is an example of a unique case, whose results may have a different outcome from other cases, due to its particular policy underwriting, financial markets, and structure. In the cash flow diagram shown in Exhibit 2, the first loan extended uses the insurance policy as the loan's collateral where there is no residual value insurance. The lender is completely exposed to depreciation in the policy's economic value. In order to compensate for the exposure, the lender charges a higher interest rate for the added risk. While it could be said lenders approve loans based on a policy's expected life settlement value, there are no guarantees the investment will yield a positive return.

Under the traditional premium finance scenario, the interest expense is assumed to be 18%, representing a high-interest loan for the life settlement policy. This grows the loan balance at 48% per year for interest capitalization and premiums borrowed. At the end of the five-year loan period, the policy's life settlement value is insufficient to satisfy the loan. Since the policy's financing costs in this case have grown at a much greater rate than has the value of the life settlement, the investment becomes inverted. If we were to compare this to a life settlement investor

<table>
<thead>
<tr>
<th>Exhibit 2</th>
<th>Effect of Residual Value Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Premium Finance</strong></td>
<td><strong>Premium Finance &amp; Residual Value Insurance</strong></td>
</tr>
<tr>
<td><strong>Year</strong></td>
<td><strong>Interest</strong></td>
</tr>
<tr>
<td>1</td>
<td>90,000</td>
</tr>
<tr>
<td>2</td>
<td>196,200</td>
</tr>
<tr>
<td>3</td>
<td>321,516</td>
</tr>
<tr>
<td>4</td>
<td>469,389</td>
</tr>
<tr>
<td>5</td>
<td>643,879</td>
</tr>
</tbody>
</table>

*An example of a 75 year old male, $5 million life insurance policy.*
purchasing a portfolio of policies, he could price policies at a lower discount rate, gaining from the mortality diversification. However, for a creditworthy lender extending loans on a per-policy basis, the same economies of scale cannot be achieved due to the mortality risk.

Looking at the alternative structure, a residual value policy is employed where the life settlement future value is insured, thus reducing the interest charged for each year. The alternative borrowed amount grows at a significantly lower rate of 36% per year, compared to the first approach. In order to offer creditworthy residual value insurance, the issuing party should be able to diversify longevity risk more effectively than a financial institution, which is mortality neutral. At the maturity of the insured loan, the life settlement residual value is sufficient to cover the borrowed amount, whereas the traditional premium finance alternative has a $920,932 shortfall.

Residual value insurance is currently available in a short and a long flavor. The short flavor covers the value for a few years, and the insurer has to be ready to hold the life settlements to maturity. The long flavor comes in a few years after life expectancy. It is available only from strong insurers on a portfolio basis, and these insurers expect the settlement houses most likely will refinance rather than surrender the policies for the insurance proceeds.

**Mortality Swaps**

Many defined benefit pension funds and annuity providers who measure mortality risk are exploring new ways to manage this risk. With increasing liabilities from beneficiaries living longer and rising healthcare costs, pension administrators are looking for mortality solutions to minimize the extension risk. This growing fear has led some pensions to annuitize, laying the longevity risk on insurance companies. Similarly, life settlement portfolio managers also study longevity risk. By applying careful underwriting and actuarial analysis, they develop a mortality view. From this knowledge, life settlement portfolio managers identify attractive policies and purchase them, thus building a life settlement portfolio. Such a portfolio becomes less susceptible to a loss from the mispricing of an individual policy, but instead the macro-mortality impacts become a new shared risk.

The original policy settlers purchased viatical insurance policies from insured individuals who were diagnosed with AIDS. Investors purchased these policies with the expectation that the insured would not live beyond two to five years. Fortunately for the patients, new medical advances have allowed people to enjoy longer life expectancies than had originally been predicted; however, investors have experienced significant losses.

This earlier experience has given life settlement portfolio managers pause upon shifting investment toward longevity risk. On the flip side, there are investors who are concerned with early death. Recent fears surrounding avian flu epidemics and heightened terrorist threats has gained the attention of life insurance companies that are concerned with the adverse impact of a given population’s change in life expectancy. To hedge both of these risks, life settlement portfolio managers and life insurance companies can look to the capital markets for mortality risk transfer. With the increased focus on longevity, investment banks have begun to publish mortality indexes such as LifeMetrics and Longevity IndexSM. By utilizing these published sources, investment banks can transact through International Swaps and Dealers Association (ISDA) swaps, which reference the mortality index. Swap providers like index references because the index is an independent metric and generally represents a population, thus removing individual mortality risk. This avoids moral hazard between the swap counterparties, since neither one controls the index’s calculation. By entering into the mortality index swap, life settlement portfolio managers and life insurance companies can indirectly hedge each other’s risk.

As shown in Exhibit 3, the swap contract can be structured in such a manner that the swap buyer receives or pays for changes in the mortality index relative to a stated notional amount. Another attractive feature about swap contracts is that they can be written for a specified maturity, allowing for fixed-term lenders to participate. In return for the index, the swap seller pays LIBOR plus a spread. For a life settlement portfolio risk manager, longevity swaps may mitigate systemic mortality risk. Also, for a portfolio manager who is ramping up a life settlement portfolio, swap arrangements provide a cost-effective mortality exposure at inception. This would also allow for a more selective portfolio—avoiding the need to amass policies that are less desirable in order to establish portfolio size. The disadvantage of a swap to the holder of a residual value policy is that the holder retains the basis risk—the risk that the swap contract will go in the opposite direction of his particular portfolio and he will take losses on both legs of his hedge.
**Exhibit 3**
Illustration of Longevity Swap

---

**Principal Protection**

While a portfolio manager of life settlement policies benefits from early death profits, this should not be considered an investment windfall, as some policies will expire well beyond life expectancy. Some persons will die earlier than expected, and others will live longer, but over the term of the investment, the portfolio should produce a reasonable return. As mentioned before, the portfolio manager becomes concerned with the risk that his entire portfolio of policies will experience extended life expectancy.

To mitigate this risk, life settlement portfolio managers have employed principal protection insurance. If we look at variable universal life policies, the cash surrender value increases when a referenced investment fund produces a positive return. Conversely, for those periods when the fund produces negative returns, the cash surrender value does not decrease, but maintains a minimum level until the referenced investment returns positive. Similarly, principal protection coverage, as it applies to life settlements, assures investors that the principal amount invested will be protected. In the event the overall mortality is extended, the investors would not experience a loss of funds, as the principal investment would be preserved.

A unique aspect of the coverage is that it can be customized to a specific portfolio. This kind of customization removes the basis risk that arises when a portfolio manager uses a mortality index swap hedge that references a population.

**Coverage Requirements**

The use of mortality risk mitigation products will certainly expand the life settlement market by offering more options, but only after investors carefully review the issues in obtaining qualified coverage. Simply considering the claims-paying rating is minimally required as an initial review. If the transaction incurred any credit or liquidity events exclusive of the coverage, having adequate reserves in place to compensate for the loss of funds would demonstrate the transaction’s structural integrity.

Also, transparency is an important consideration as regulators begin to take an interest in the life settlement market and focus on issues surrounding insurable interest and commission disclosures, both possible sources of future litigation. Proper transparency associated with credit-rated entities is also essential to make both investors and commercial lenders comfortable with mortality risk transfer products.

**Conclusion**

Investors pondering life settlements may be comfortable with mortality risk but are limited by sources of capital. Now, with innovative risk mitigation solutions
emerging, investors are able to combine traditional lending facilities with mortality risk transfer products, and thus deploy capital more efficiently toward life settlements. In order to obtain effective risk transfer, the issuing counterparty can affect the economics of the transaction. Due to the long-tailed risk of the underlying collateral, the only truly sound sources of mortality coverage are carriers or banks that have qualified risk underwriting and sound financial capital backing. Also, when considering the risk of a collateral insuring party, it would seem reasonable for bank to insist that such a party be approved by a credit rating agency.

As more participants create structures that transfer appropriate risk, investors will unlock the life settlement market and allow it to access the financial efficiencies found in the fixed income markets.

ENDNOTES

1LifeMetrics, published by J.P. Morgan, www.jpmorgan.com/lifemetrics


To order reprints of this article, please contact Dewey Palmieri at dpalmieri@ijournals.com or 212-224-3675