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An examination of Life Settlement Downside Risk

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Introduction

Any investment in a life settlement asset results in multiple costs with the main ones being the policy purchase and subsequent premium payments. However, there are also policy management expenses and possibly funding costs should premium financing be required at any point. These costs, when combined, could potentially amount to more than the benefit value of the asset. This report will examine the risk of this event; for the purposes of this report it will be called “downside risk”.

Any individual life settlement investment within a portfolio that results in a loss will offset the positive returns of the portfolio as a whole. Some market practice in the past has generally been concerned with measuring only the likelihood component of downside risk. However, our approach to measuring the life settlement downside risk is made up of two components, the likelihood of the loss event occurring and the expected financial severity of such an event were it to occur. Investigating downside risk on any given life settlement asset using this more measured approach has the following two benefits for the investor:

- A fuller understanding of the risk before committing to invest for the long term leading to a more informed decision as to whether the risk is acceptable or not.
- In the event that the risk is deemed to be acceptable, a potential adjustment to the offer price could render it more commensurate to the specific downside risk as a whole. For example, if the investment has a high financial severity component of downside risk, all else being equal, an investor may make an offer at a higher IRR in order to compensate. Alternatively, if the investment has more attractive severity of downside risk, all else being equal, an investor may be prepared to offer at a lower IRR.

Life settlement downside risk investigation

Our analysis of the life settlement market reveals numerous levels of downside risk. At the attractive end of the possible downside risk range, some investments offer a very low or even zero likelihood of realizing a loss, combined with the fact that even if a loss was to occur, its loss severity would be minimal. This is more apparent when the premiums are at a low level (for example, due to either the insured being young or classified as a preferred risk by the life insurance carrier, or the policy being a convertible term life and in its term phase) and combined with the life expectancy forecast of the insured being relatively short due to the onset of one or more unforeseen illnesses since the policy inception. At the other end of the scale, some life settlement investments offer a much higher likelihood and severity of realizing a loss. This is more apparent on older policies that have been in force for a significant amount of time (and the expiry age is relatively young, e.g. around 100 or even 95) and combined with an event at maturity where the policy either expires completely or the face amount is reduced to the cash surrender value. If the insured is already living into their 90s or has a relatively low level of impairments, this issue is compounded.

These are just the extremes of the downside risk, the majority of life settlement investments fall somewhere in the middle of these two scenarios. A key indicator of downside risk is the level of insured impairment usually expressed as a mortality rating of the insured. Generally speaking, the higher the mortality rating, the lower the estimated downside risk. This is intuitive, as the higher the mortality rating, the lower the assumed life expectancy and, all else being equal, the lower the premium commitments will generally be.

Example portfolio downside risk

Except in cases where the policies expire and all prior investments in these particular assets are lost, the severity of the possible losses can be measured in terms of expected negative IRRs assuming the insureds survive to the start of each loss-making period. By combining this with the likelihood of the losses occurring, we can develop a fuller picture of downside risk for each individual life settlement.

For example, we took a sample of one hundred policies and valued them according to our view of the current market conditions. We then calculated the downside risk estimate on each one and classified them into one of four different relative levels, “very high risk”, “high risk”, “moderate risk” and “low risk” (Table 1). In the instances where the policies would expire upon maturity and the full investment to date would be lost, it was impossible to calculate a negative IRR for the loss scenario as the return component in the equation is zero. To accommodate this, we looked at the likelihood of this loss occurring, approximated the severity of the loss in terms of negative IRRs and then classified it accordingly. For simplicity, we have taken the policy management expenses and the possible financing costs out of the equation. We have also assumed that each policy would be held until the benefit is received and not sold on to a third party. We also assumed that none of the life insurance carriers default on the benefit payments. It should be noted that selling the policy on to a third party can also result in losses and that life insurance carriers can successfully challenge benefit payments. Furthermore, the inclusion of policy management expenses and possible financing costs will increase the downside risk.

Table 1: Downside Risk Estimate Classification

Relative Downside Risk Category	Downside Risk Estimate Range
Low	0.0% to -0.5%
Moderate	-0.5% to -1.0%
High	-1.0% to -1.5%
Very High	Less than -1.5%

Obviously, the estimated likelihood of each loss scenario is dependent upon the mortality assumptions used. For this investigation, we first used our view of the assumptions used in generating a market price; we then fixed the market price and repeated this again using A.M. Best's mortality rating adjustments as published in the 2014 Life Settlement Securitization Methodology¹ (Table 2). This was done in order to show an example of the downside risk on a more conservative mortality basis than generally used for market pricing assumptions. As can be seen from Table 2, the average policy estimated likelihood of loss using market mortality assumptions was 7.73%; this more than doubled to 18.3% using A.M. Best's mortality rating adjustments. The average policy expected severity of the losses, were they to occur, was a negative IRR of -3.14% using market mortality assumptions, and increased to -4.88% using A.M. Best mortality rating adjustments. The average policy downside risk estimate was calculated as -0.32% ("low risk") using market mortality assumptions and as -1.03% ("high risk") using A.M. Best's mortality assumptions. Accordingly, the proportions of policies in the relative downside risk categories also changed significantly when switching to use A.M. Best mortality rating adjustments. For example, the proportion in the low risk classification reduced from 83% to 32%, whereas the proportion in the very high risk classifications increased from 2% to 21%.

Table 2: Example Portfolio Downside Risk Using Market and A.M. Best Mortality Assumptions

	Mortality Assumptions		Difference
	Market Pricing	A.M. Best	
Number of Policies	100	100	0
Total Face Amount	\$388,791,393	\$388,791,393	\$0
Assumed Portfolio Purchase Amount (Market Price)	\$104,033,952	\$104,033,952	\$0
Average Projected Policy Loss Likelihood	7.73%	18.30%	10.56%
Average Policy Expected IRR if Loss Occurs	-3.14%	-4.88%	-1.74%
Average Policy Downside Risk Estimate	-0.32%	-1.03%	-0.72%
Proportion in Low Downside Relative Risk Category	83.00%	32.00%	-51.00%
Proportion in Moderate Downside Relative Risk Category	9.00%	26.00%	17.00%
Proportion in High Downside Relative Risk Category	6.00%	21.00%	15.00%
Proportion in Very High Downside Relative Risk Category	2.00%	21.00%	19.00%

Downside risk on more prudent pricing assumptions

We then repeated this investigation using A.M. Best mortality adjustments and this time let the assumed purchase price change according to the more conservative mortality assumptions (Table 3). As can be seen, the assumed portfolio purchase price changed significantly. However, the average policy downside risk estimate only changed from -1.03% to -0.92%. The proportions in the various relative downside risk categories also did not change significantly, with the largest change being four fewer policies in the "high risk" category. Generally speaking, if A.M. Best's mortality assumptions are

¹ A.M. Best Methodology, Life Settlement Securitization, Adjustments to Mortality Ratings, February 21, 2014, pages 17-21.

the more realistic picture of mortality, using these for the pricing assumptions does not appear to change the downside risk significantly.

Table 3: Example Portfolio Downside Risk on A.M. Best Mortality Assumptions

	Market Price	A.M. Best Mortality Price	Difference
Number of Policies	100	100	0
Total Face Amount	\$388,791,393	\$388,791,393	\$0
Assumed Portfolio Purchase Amount	\$104,033,952	\$83,542,338	-\$20,491,614
Average Projected Policy Loss Likelihood	18.30%	16.05%	-2.25%
Average Policy Expected IRR if Loss Occurs	-4.88%	-4.76%	0.12%
Average Policy Downside Risk Estimate	-1.03%	-0.92%	0.11%
Proportion in Low Downside Relative Risk Category	32.00%	35.00%	3.00%
Proportion in Moderate Downside Relative Risk Category	26.00%	29.00%	3.00%
Proportion in High Downside Relative Risk Category	21.00%	17.00%	-4.00%
Proportion in Very High Downside Relative Risk Category	21.00%	19.00%	-2.00%

Downside risk and average mortality rating link

When reviewing the average insured impairment levels for each downside risk category, a general trend emerges indicating that, the higher the solved mortality rating is, the lower the estimated downside risk tends to be (Table 4). This even holds true under A.M. Best's mortality assumptions where the mortality ratings are worn off to non-impaired levels as the insured ages in the projection. Obviously, if the insured completely overcomes their impairments in the near future, the downside risk can be far worse if the purchase price already took into account the extent of the insured's impairments as at the time of purchase.

Table 4: Average Solved Mortality Rating for each Downside Risk Category

	Market Price and Market Mortality	Market Price and A.M. Best Mortality	A.M. Best Price and A.M. Best Mortality
Low Relative Downside Risk	361%	437%	416%
Moderate Relative Downside Risk	255%	328%	336%
High Relative Downside Risk	132%	259%	240%
Very High Relative Downside Risk	189%	258%	264%

Example extremes of downside risk

Examining the extremes of the downside risk, the maximum estimated likelihood of loss was 23% under market mortality assumptions and market pricing (Table 5). This increased to 39% under A.M. Best's mortality assumptions and market prices. The maximum expected loss severity was an IRR of -21.6% under all assumptions (in this case the loss event was the same, i.e. the policy reaching expiry with very little benefit paid out). The maximum downside risk estimate was -3.1% under market assumptions, however this increased to -7.8% when using market prices and A.M. Best mortality assumptions. At the other end of the scale, some policies showed a zero percent likelihood of loss under all pricing and mortality scenarios.

Table 5: Example Downside Risk Extremes Using Various Mortality and Price Assumptions

Sample Portfolio Downside Risk Extremes						
Basis	Likelihood of Loss		Expected Loss (IRR)		Downside Risk Estimate	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
Market Price and Mortality	23%	0%	-21.6%	0.0%	-3.1%	0.0%
Market Price and A.M. Best Mortality	39%	0%	-21.6%	0.0%	-7.8%	0.0%
A.M. Best Price and Mortality	36%	0%	-21.6%	0.0%	-7.8%	0.0%

Conclusions

It may be that a more systematic approach to estimating downside risk is needed in the life settlement market, which may result in the prices offered being more commensurate with the results of an enhanced downside risk analysis.

Generally speaking, the higher the solved mortality rating, the lower the assumed likelihood of loss. This even holds true when the market price is fixed and the mortality rating is worn off to non-impaired levels as the insured ages in the projection. However, the downside risk would be worse for cases where the insured's impairments were high at the time of purchase but subsequently reduced (for example through treatment or change of lifestyle).

The range of downside risk is significantly large when considering many individual life settlement assets. At one end of the scale, under A.M. Best's mortality assumptions and using general market prices, the estimated chances of realizing a loss can be as high as 39%. At the other end of the scale, some life settlement assets can offer zero percent likelihoods of loss under market prices and assuming the policies' current cost of insurance (COI) charges do not increase significantly.

Although the severity of loss in terms of negative IRRs can appear small, the issue is compounded by the potential long-term nature of life settlements and can, therefore, be a significant deciding factor in a life settlement transaction.

Downside risk can be diversified away to a certain extent when considering aggregate portfolio performance comprising a sufficiently large number of policies. Additionally, a more complete picture of the longevity risk is given when downside risk is considered alongside the upside potential of each life settlement asset.