Breaking Apart the Crediting Rate

Introduction

Stable value funds function differently from other commonly offered investment menu options but their unique mechanics are seldom understood or closely examined. This article seeks to educate plan fiduciaries on the mechanics of the stable value crediting rate (the source of stable value returns) by looking at its underlying pieces. The exercise may help provide a fundamental understanding of stable value as a whole while giving insight on the impact of various market conditions.

How Does Stable Value Work?

Stable value is designed to allow participants to accumulate interest while preserving capital. In a stable value fund, a participant's account balance or book value (BV) steadily grows at a pre-determined crediting rate that is declared by the investment manager, typically on a monthly or quarterly basis. The participant can withdraw their BV, which is insured against losses by a third party. The crediting rate at which BV grows is a mechanism that amortizes market-driven price fluctuations into a smooth rate of return, generally stated as such:

$$\text{Crediting Rate} = (\text{Market Value}/\text{Book Value})^{(1/\text{Duration})} \times (1+\text{Yield}) - \text{Fees} - 1$$

Market Value = the open-market price of the portfolio's securities
Book Value = the participant's guaranteed funds at period-start, including principal and interest
Duration = a measure of sensitivity to changes in interest rates
Yield = the expected return on the portfolio's securities
Fees = investment management and financial wrap charges

The ratio of the MV to BV (the market-to-book ratio or M/B) represents the premium or discount at which the portfolio's securities trade relative to the amount that is guaranteed to investors. The extent to which any such difference exists is amortized over the portfolio's duration, which generally corresponds to the expected maturity of the securities. The yield is then multiplied by this amount to determine the crediting rate, before fees. As such, the crediting rate can be viewed as a mechanism to mute the effects of MV fluctuations on portfolio growth.

SUMMARY

- The crediting rate mechanically determines the returns of a stable value fund.
- Understanding its functionality can help plan sponsors gain a clear sense of how a stable value fund may perform over a market cycle.
- Longer duration does not necessarily mean more volatility of returns.
- Investors are the first parties to provide the book value guarantee.

What Drives Returns?

The chart below provides an illustration of how these variables interact (D = duration and Y = yield). A higher M/B or yield should increase the crediting rate, all else held equal. The reader may extrapolate from the graph that a crediting rate could become negative under the combination of poor market conditions and low rates. While this appears mathematically possible (and is outside of this firm's investment experience), it is also worth noting that bond yields and prices move in opposite step, meaning that a decrease in one is offset by an increase in another.
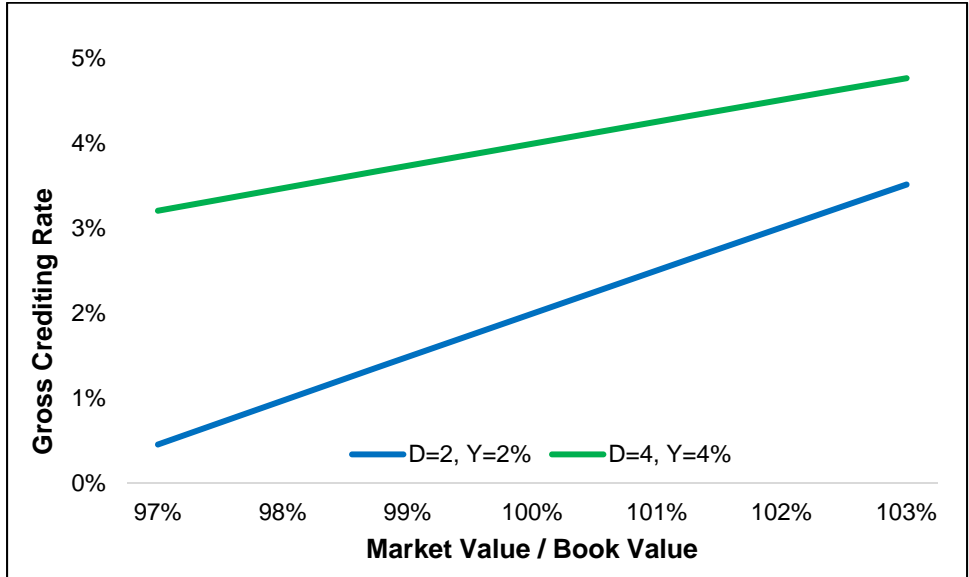
Duration can generally be expected to have a mitigating or smoothing effect on a given M/B, meaning that M/B's impact on the crediting rate declines as duration increases. The lines in the graph below illustrate this by combining $M/B^{(1/D)}$ into a single "Amortization Factor" (AF).
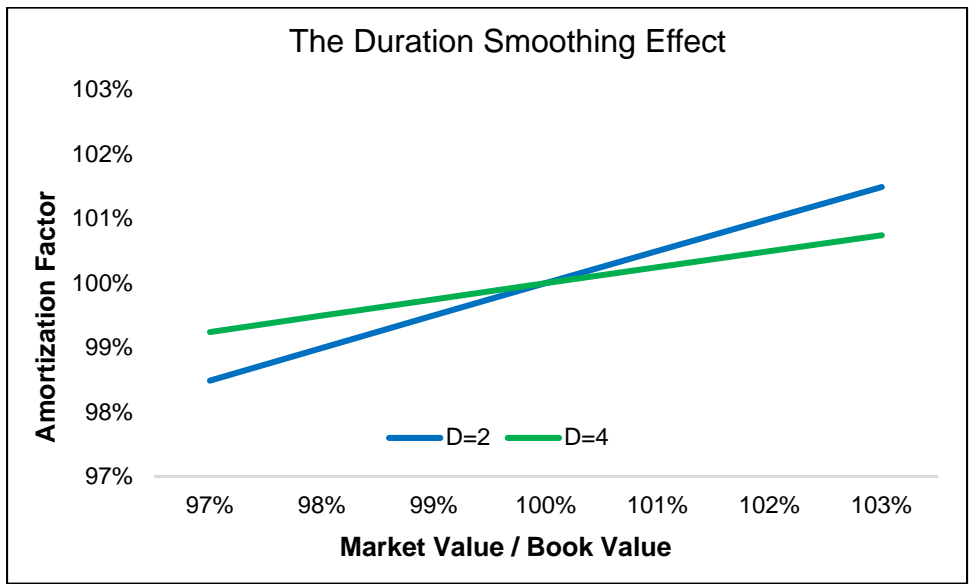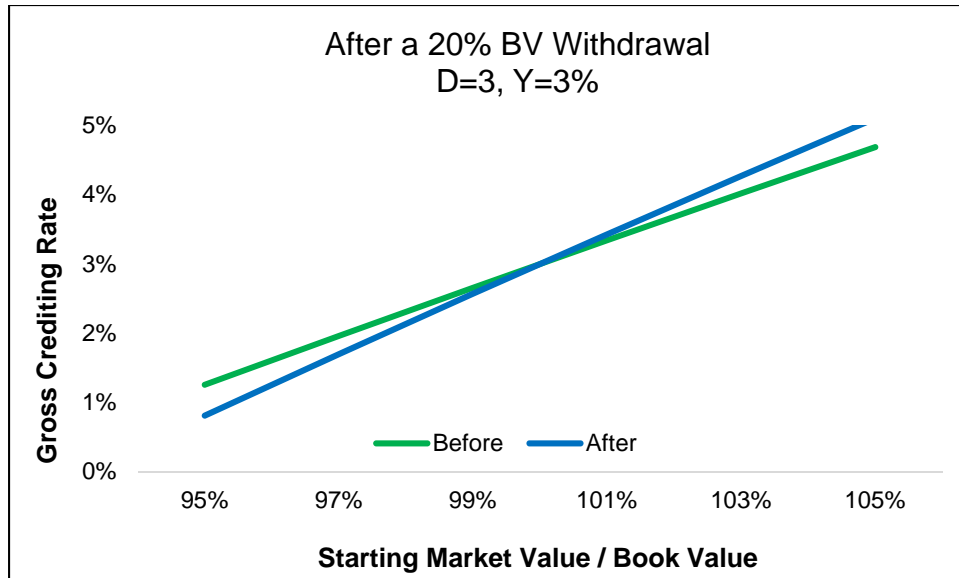
One might conclude from the chart above that higher duration leads to a more stable AF. However it is important to recall the measure of interest rate risk that duration represents in the first place: the percentage change in a bond's price for a given increase or decrease in interest rates (e.g. the price of a bond with a duration of 2 will drop by 2% if rates rise by 1 percentage point). Interestingly, the AF's construction causes the interest rate sensitivity that duration adds to the portfolio to be comparably offset via the amortization. This generally implies that long-term investors may prefer longer-duration stable value funds since their AF can be expected to fluctuate comparably to that of shorter-duration funds, but may offer higher yields by investing in longer-term securities. One important drawback however is that longer-duration funds may spend more time with a market-to-book ratio below the par value of 100%, particularly in a rising interest rate environment. This can be important for plans that are considering liquidating since it is common practice for stable value funds to require such plan-level withdrawal requests to be delayed by as much as two years or until M/B=1.
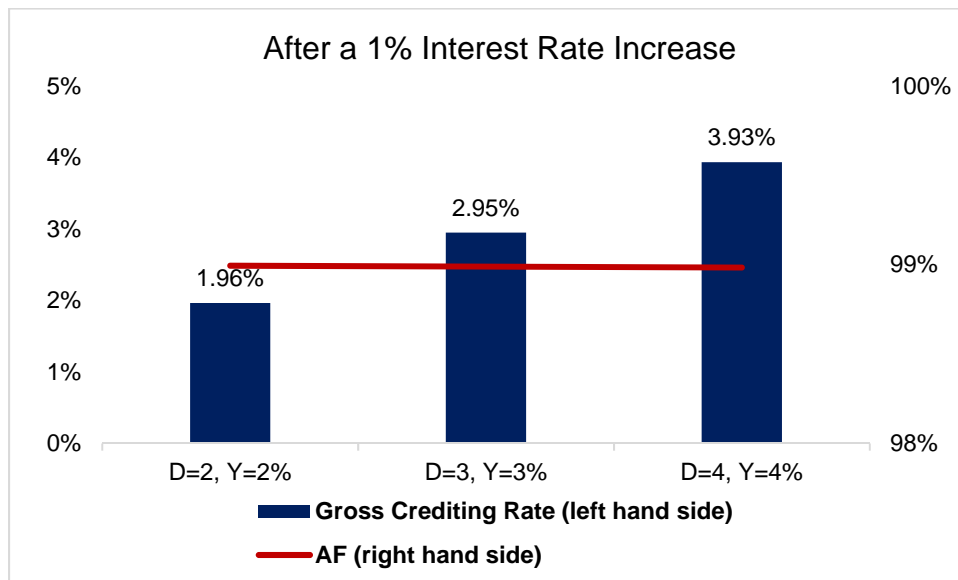
Who Provides Insurance?

There is a recurring misperception in the investment industry about when the insurers, or wrap providers step in and make payments to ensure that participants receive BV. It is commonly believed that participants who withdraw their assets when MV<BV receive the difference between the two from the wrap provider. The difference actually comes from the MV itself (wrappers make payments when the MV=$0, assuming that contractual coverage terms have been adhered to). The act of paying the difference out of the market value widens any M/B discount or premium for the remaining investors, likely without much corresponding change in yield. Conversely, BV withdrawals when MV>BV are accretive to the portfolio's remaining investors. The chart below provides an illustration of how the impact on the crediting rate from a substantial withdrawal varies, depending on the starting M/B.

After a 20% BV Withdrawal
D=3, Y=3%

Chart: Gross Crediting Rate (y-axis, 0% to 5%) vs. Starting Market Value / Book Value (x-axis, 95% to 105%). Two lines labeled "Before" (green) and "After" (blue).

In an analogous twist to the graphic above, defaults of underlying securities are also typically deducted from the MV, and thereby the crediting rate, rather than being guaranteed by wrappers. Although wrappers are insulated from having to make payments, a low M/B still carries financial risks to them in that it can lower a wrapper's risk-based capital and ability to invest aggressively in their general account. This in turn limits their willingness to wrap riskier bonds unless their fees provide an adequate offset to the additional risk.

Conclusion
Stable value is a surprisingly nuanced asset class whose outcomes are mechanically driven. Investment analysis of stable value funds however, often focuses on a portfolio's holdings (credit quality, asset allocation, duration, etc) without considering how these lead to the crediting rate from which an investor's account value is derived. By understanding the crediting rate formula itself, fiduciaries will be better equipped to estimate the different risk and return profiles between stable value funds and make more informed decisions. Though there are many additional considerations that this paper does not address, the crediting rate formula is the most foundational aspect of stable value, and deserves added attention.