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*Crediting rates (CR) are designed to pass through the performance of the underlying bond portfolio, though smoothing out the volatility caused by interest rate fluctuations. Crediting rates are generally calculated using the following formula and portfolio-specific data: market value (MV), book value (BV), current yield-to-maturity (YTM), and duration (D).*

$$CR = (((1+YTM) * ((MV/BV)^{(1/D)})) - 1)$$

*There are two basic terms in this equation that lead to stable crediting rates: a yield factor and a market value factor. Given the mechanics of bond math, where rising yields cause a decline in market value, these two terms tend to offset each other over short periods of time. For example, a 3.0 year duration bond portfolio would incur roughly a 3% decline in market value with a 100 basis point increase in yields. As the loss in MV compared to BV is amortized over the duration of the portfolio, the immediate impact on the crediting rate is small. Over time, crediting rates move in the direction of yield changes.*

# Stable Value Funds and Rising Interest Rates

After several premature obituaries over the past dozen years, many pundits are calling for the end of the three decade long bull market for bonds. Since July, when the benchmark 10-year US Treasury note hit an all-time low yield of 1.36%, bond yields have ratcheted higher. This trend accelerated with the election of Donald Trump as president, which was not priced into the capital markets. Post-election, as investors have focused on potentially favorable regulatory and tax policy changes, stronger economic growth and higher inflation, US Treasury yields have climbed another 50+ basis points. As of November 30th, 5 and 10 year US Treasuries were yielding 1.90% and 2.38%, respectively, up roughly 100 basis points from their summer lows.

Plan sponsors and consultants have asked the very reasonable question, how will my stable value fund perform in an environment of rapidly rising rates? While not our base forecast, this paper explores how stable value funds fared in prior episodes of rising interest rates, and offers some observations and general comments on the current environment.

## History Doesn't Repeat Itself but It Often Rhymes

Since the mid-1980s, the secular decline in bond yields has been briefly interrupted by several Federal Reserve tightening cycles that resulted in painful bear markets for bond investors. Stable value funds performed as designed in these environments, shielding participants from declining bond prices and allowing participants to earn a steady, stable return on their retirement savings.

In general, crediting rates (e.g., returns) on stable value funds lag changes in market interest rates. This is by design. All stable value funds employ "book value" wrap contracts – a type of insurance – that smooth the price volatility of an underlying bond portfolio. Plan participants are thus protected against sharply rising rates, in that they can transfer money out of the fund at book value (cost plus credited interest) and not suffer a principal loss associated with a market valued, unwrapped bond portfolio. Book value wrap contracts use a fairly standard formula for crediting returns to participants (see sidebar). This formula takes into consideration the yield-to-maturity, duration and total returns of the underlying portfolio. In effect, it amortizes bond price changes into the crediting rate, smoothing the impact on investors.

To illustrate how stable value funds work, we have constructed a hypothetical portfolio using the Bloomberg Barclays 1-5 Year Government/Credit Index as the underlying fixed income portfolio. The index has a duration in line with most stable value portfolios – currently 2.75 years – and captures returns of investment grade corporate bonds, US Treasuries and Agencies. The portfolio was created in September 1991, with monthly book value returns calculated using the standard crediting rate formula and characteristics of the index (yield-to-maturity, duration and monthly total return).\* This allows us to examine crediting rates and market-to-book value ratios (described on page 2) during periods of interest rate volatility, and is a very good proxy for how most stable value funds have fared over time. Using index data also isolates the effect of interest rate changes on the portfolio, which can often be obscured by participant cash flows and/or investment manager actions.

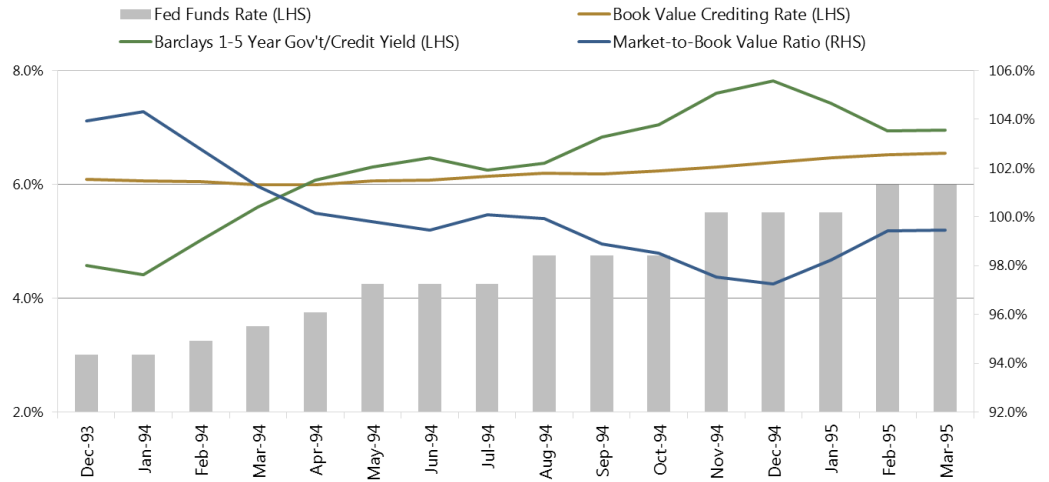
Looking back over the past 25 years of bond market history, three key periods of rising rates stand out.

**1994 - Early 1995**

*The market-to-book ratio is one measure of the health of a stable value fund. It measures the total market value of the underlying bond portfolio compared to the book value of the contract that wraps the portfolio. Over a normal interest rate cycle this ratio would typically range from a low of 97% to a high of 103%.*

1994 was a tumultuous year for the bond market, as the Federal Reserve’s short term target rate went from 3.00% in February 1994 to 6.00% by February 1995, catching bond investors off guard. Intermediate term bond yields followed suit, moving from 4.41% in January 1994 to 7.82% by year-end, before declining to 6.94% by February 1995. An investment in the index on an unwrapped basis would have incurred a market value loss of 1.55% from January to December 1994. A wrapped, stable value investment in the same portfolio would have earned a positive 5.59%.

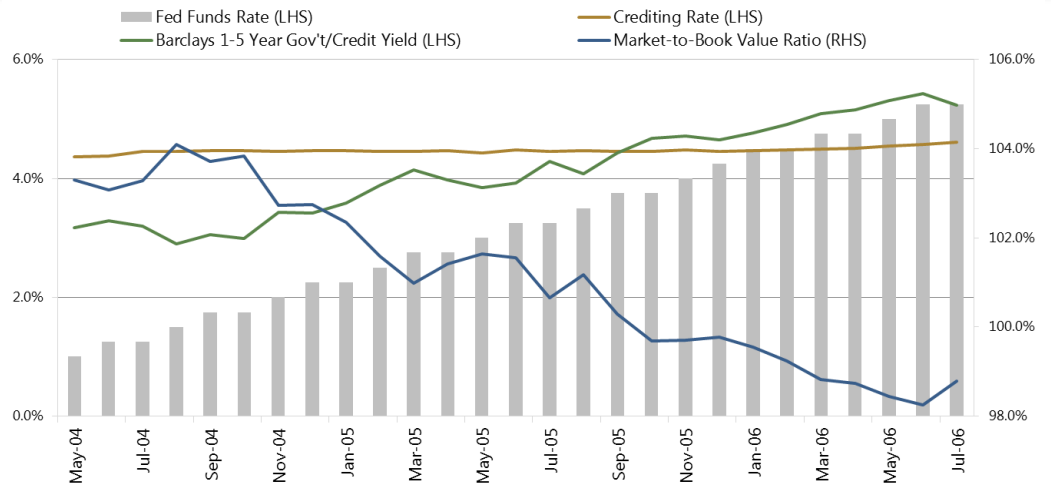
As shown in the chart below, higher rates impacted the market-to-book value ratio on our hypothetical stable value portfolio, falling from 104.3% (Jan 1994) to a low of 97.5% (Dec 1994) and rising to 99.4% by February 1995. From a participant’s perspective, the book value wrap contract performed exactly as designed, insulating participants from the decline in bond prices and gradually incorporating higher market yields into the fund’s crediting rate. Thus, participants saw their crediting rate rise by approximately 50 basis points (from 6.05% to 6.52%) during the twelve months ended February 1995.



Sources: Standish and Bloomberg

**June 2004 - June 2006**

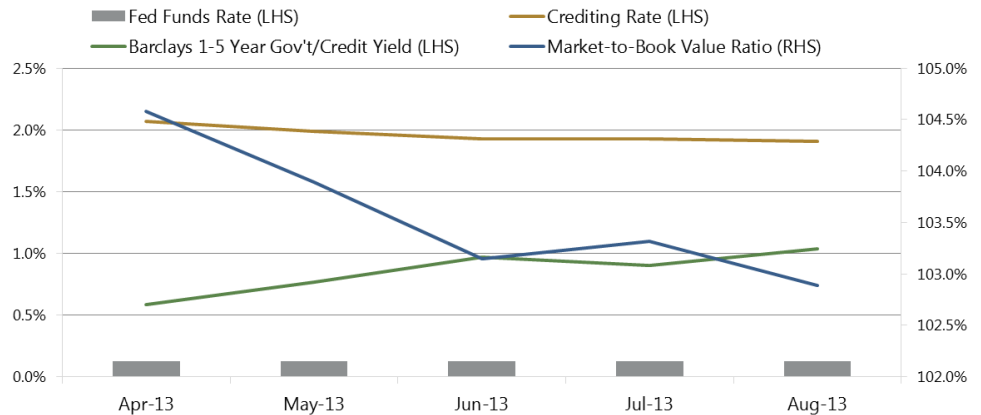
In 2003, the economy was still recovering from the recession spawned by the combined effects of the Dot Com market crash and 9/11. To combat the recession and the threat of deflation, the Federal Reserve pushed short term interest rates down to what were historically low levels, dropping the Fed Fund’s target to 1.00% in mid-2003. A year later, with signs of a blossoming economy, the Federal Reserve began a 24 month tightening campaign, pushing the Fed Funds rate from 1.00% in June 2004 to 5.25% by June 2006. Not surprisingly, bond markets sold off, with the yield of the 1-5 year Government/Credit Index rising from 3.17% to 5.43%. This caused the market-to-book value ratio on our hypothetical portfolio to decline from 103.3% to 98.3%. Changes in crediting rates were somewhat muted during this period, increasing from 4.36% to 4.61%.



Sources: Standish and Bloomberg

### 2013 “Taper Tantrum”

Unlike the two eras highlighted above, this Treasury sell-off was not accompanied by explicitly tighter Federal Reserve policy. Rather, it was triggered by Fed Chairman Ben Bernanke signaling that the Federal Reserve would soon remove their accommodative stance, “tapering” its monthly purchases of US Treasuries held on the Fed’s balance sheet. At the hint of tighter money, fixed income markets spasmed over the ensuing months, with bond yields spiking. The yield of the Bloomberg Barclays index rose from a paltry 58 basis points in April 2013 to over 1.00% by August. Market-to-book value ratios declined from 104.6% to 102.9% during this four month span. This spasm was somewhat short lived, as the Federal Reserve backed off on the tightening threat, and Fed Funds remained at a 0-25 basis point target until the end of 2015. With the sell-off confined to a short period, crediting rates were little changed, and our hypothetical portfolio continued to produce a steady 1.90%-2.10% annualized return, out earning the index yield by roughly 100 basis points per annum.



Sources: Standish and Bloomberg

### Observations

We offer the following observations on the current interest rate environment and its impact on stable value portfolios.

- 1) Based on current economic data, Federal Reserve “dot plots” and pricing in the futures market, we do not expect the Federal Reserve to aggressively raise interest rates. Our forecast, consistent with market pricing, is a gradual tightening, starting with a 25 basis point increase in late December 2016 with perhaps one to two additional moves in 2017. In

total, the Fed Funds rate will likely be 50 to 75 basis points higher by December 2017. Given concerns on global growth, dollar appreciation, negative interest rates abroad and contained inflation, the terminal Fed Funds rate should remain below historical norms, likely peaking around 2.50%-3.00% by 2020.

- 2) Over the longer term, higher interest rates will be beneficial for stable value investors. While market-to-book value ratios will initially decline, the current low yield environment makes it difficult for savers to amass a reasonable nest egg for retirement. As interest rates eventually normalize (perhaps years from now), savers will see higher compound annual growth rates for their retirement savings. The difference in even a 1% higher return is significant over a 20 to 30 year period.
- 3) How quickly a stable value fund reacts to a change in interest rates is a function of several factors, with portfolio duration and participant cash flows the most dominant ones. All else being equal, a lengthening of duration causes the portfolio's crediting rate to be less responsive to a change in interest rates. This underpins a simple rule of thumb: for a given shift in interest rates, say a 100 basis points increase, it takes roughly 1.5x to 2x the portfolio's duration for the crediting rate to reflect that change. Thus, for a 3.0 year duration portfolio, it may take 4.5 to 6.0 years for its crediting rate to increase by the 100 basis point change. A portfolio with positive participant-directed cash flows will react more quickly to a shift in rates, as more dollars are reinvested at prevailing rates. A portfolio experiencing persistent negative cash flows will behave like a longer duration portfolio, as there is less money available for reinvestment.
- 4) At Standish, we incorporate several structural features into our portfolio management to mitigate the impact of higher interest rates on stable value portfolios. First, we allocate 10% to 20% of a fund to shorter duration bonds that we use to construct a laddered maturity schedule. This ensures a steady source of maturing cash flow for either participant liquidity needs, or for reinvestment. Second, we diversify our yield curve exposure by having at least two (or more) benchmarks included in a fund. Thus 25% to 40% of the fund is typically managed to a benchmark(s) with a 2.0 year to 3.0 year duration with the remaining portion targeted to a longer duration proxy (~3.5 years or longer). If the yield curve flattens because short rates are rising faster than long rates, a portion of the portfolio will explicitly capture this change. Finally, we manage our concentration of mortgage backed securities (MBS) to less than 33% of the portfolio. MBS, which lengthen in duration as rates move higher, can adversely affect interest rate tracking in a volatile rate environment.
- 5) Today, most stable value funds have a built in market-to-book value cushion that will help preserve ratios in a rapidly rising environment. For example, the market-to-book value ratio on our separate account composite as of September 30, 2016 was 102.5%. With a composite duration of 2.98 years, the average portfolio can withstand a ~75 basis points rate increase before its market-to-book value ratio dips below par.

### Conclusions

While we are not forecasting a lengthy or deep bear market for fixed income assets, we are not afraid of higher rates either. Stable value portfolios are constructed with an eye towards interest rates eventually normalizing, with structured maturities, diversified yield curve exposures and prudent concentrations to mortgage-backed securities. Market-to-book ratios will decline as interest rates move higher, however, investors will ultimately benefit as their savings will grow at higher compounded rates.

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\* Past performance is no indication of future results. Commentary based on a hypothetical book value portfolio using the Bloomberg Barclays 1-5 Year Government/Credit Index as the underlying fixed income portfolio. The Standish-created portfolio assumes a 15 basis point annual book value wrap fee from inception (September 1991) to June 30, 2004, 10 basis points from then until December 31, 2008, 15 basis points from then until December 31, 2011 and 20 basis points thereafter.

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