

The Benefits of Active Bond Laddering

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February 2009 (Updated March 2018)

Laddering is one of the most effective tools we rely on to manage Thornburg's core bond portfolios. Laddering has outperformed bullet and barbell approaches, research shows.

Executive Summary

- Active laddering is a simple way to diversify our portfolios along their entire investment universe.
- The approach helps us effectively manage duration risk and is especially vital in today's uncertain rate environment.
- Compared to other bond investment strategies—such as the barbell and bullet approaches—laddering has outperformed over the long term.

One of the tools we use at Thornburg to manage our core fixed income portfolios is laddering bond maturities. Contrary to some perceptions, laddering is not a passive investment strategy; rather, it's one of several active techniques managers have at their disposal to manage duration risk.

The discipline of laddering frees us to determine which sectors of the market offer the best relative value and which issues within those sectors provide the highest potential return for a given level of risk.

Laddering Helps Balance Different Risks

Laddering involves building a portfolio of bonds with staggered maturities so that a portion matures each year. Money that comes from maturing bonds is typically invested in bonds with longer maturities at the far end of the portfolio. Laddering is effective in that it accomplishes several goals:

- It captures price appreciation as bonds age and their remaining life shortens.

- Principal is reinvested from maturing shorter-term bonds (which, when the yield curve is normal, have lower yields) into longer-term bonds, with higher yields.
- It has the potential to maximize income and, because portfolio turnover is low and we manage capital gains exposure, tends to be tax efficient.

Chart 1 | Three Types of Active Strategies for Managing Duration Risk

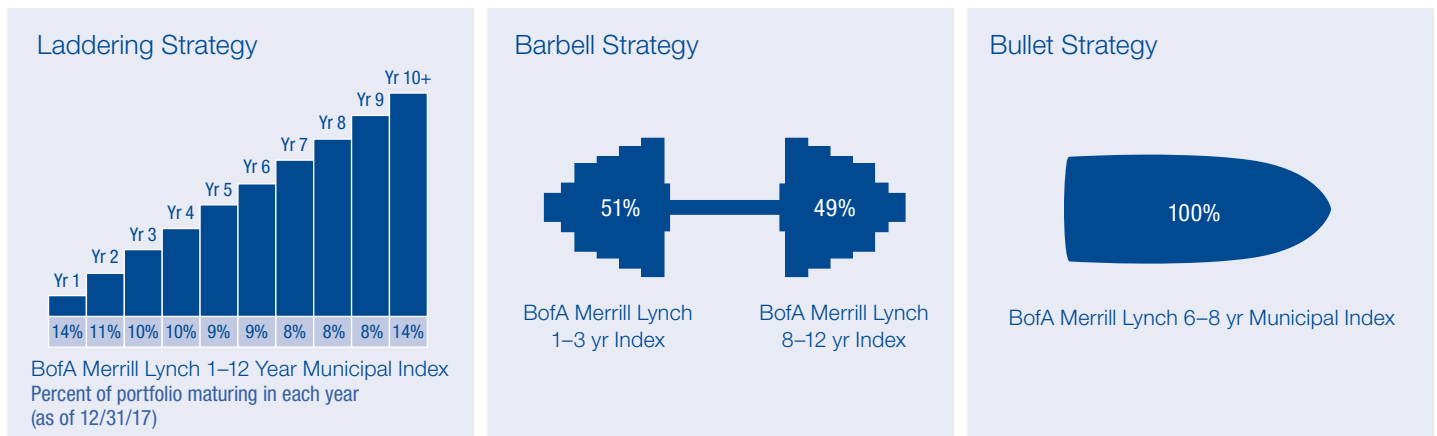
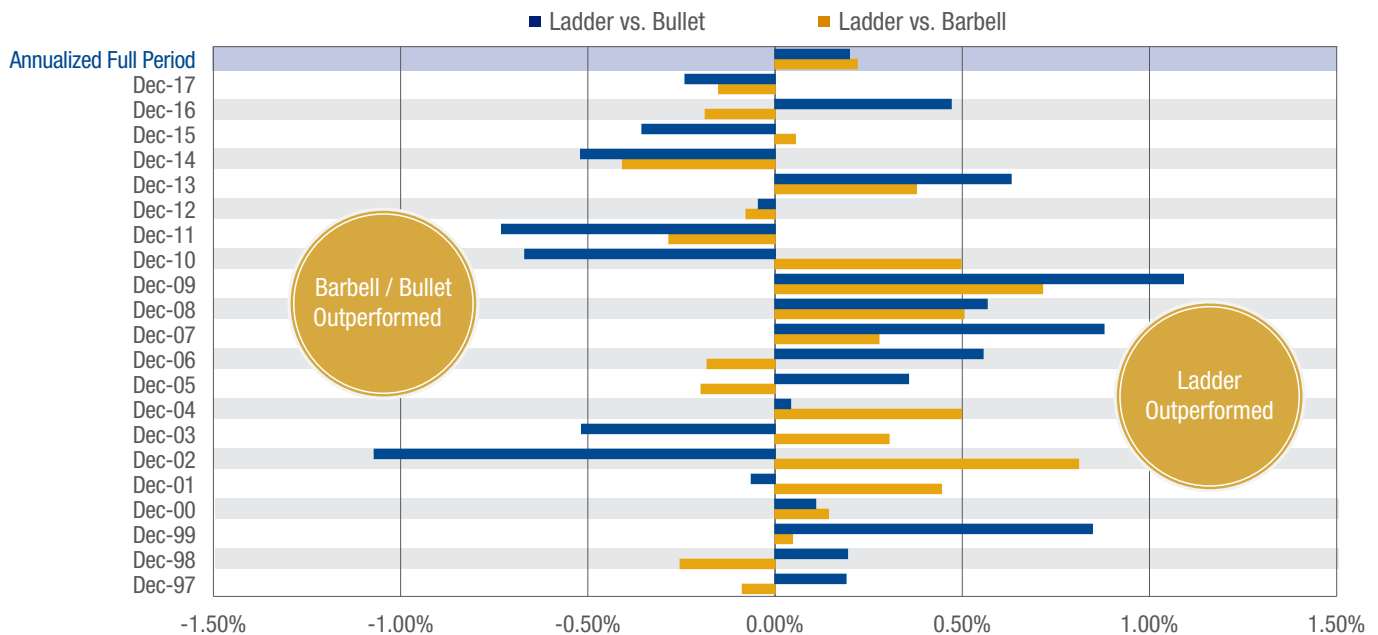


Chart 2 | Difference in Total Returns Among Types of Active Strategies



Source: Bloomberg and Thornburg Investment Management. Past performance does not guarantee future results.

Laddering Has Been More Effective Than Other Strategies

We examined three hypothetical portfolios of bonds over the last 19 years: one using a **laddering strategy**, one using a **barbell strategy**, and a third using a **bullet strategy**.

The **barbell strategy** is a bond investment strategy that concentrates holdings in shorter-term and longer-term maturities, forming a structure that resembles a barbell. A **bullet strategy** structure is a bond investment strategy that concentrates holdings in intermediate-term maturities and avoids shorter-term or longer-term maturities. For the laddering strategy, the BofA Merrill Lynch 1–12 Year Municipal Index was used as a proxy, since, similar to a ladder, it contains bonds relatively evenly spread across all maturities within the index. For the barbell strategy, the BofA Merrill Lynch 1–3 Year Municipal Index and BofA Merrill Lynch 8–12 Year Municipal Index were combined. The two indices were weighted in such a way as to give them the same duration as the broader 1–12 Year Index, and each year the portfolio was re-weighted back to the original index weights. This

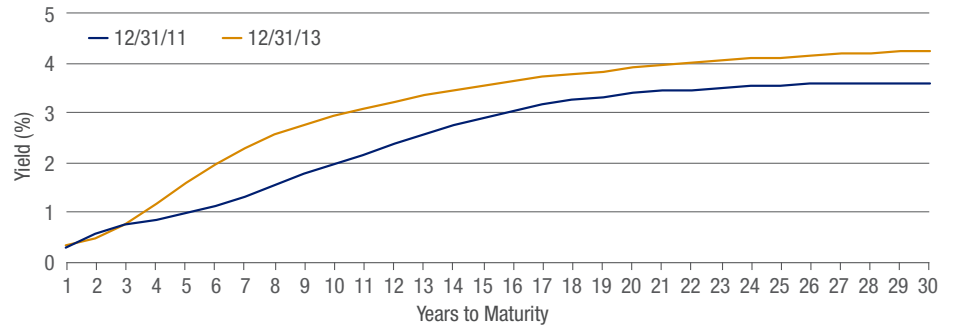
Chart 3 | Difference in Total Returns

Year	TOTAL RETURNS				
	Ladder	Barbell	Bullet	Diff. v. Barbell	Diff. v. Bullet
Annualized Full Period	4.42%	4.23%	4.24%	0.19%	0.18%
2017	3.21%	3.36%	3.45%	-0.15%	-0.24%
2016	0.02%	0.20%	-0.45%	-0.19%	0.47%
2015	2.34%	2.28%	2.69%	0.05%	-0.36%
2014	4.27%	4.68%	4.79%	-0.41%	-0.52%
2013	-0.12%	-0.49%	-0.75%	0.38%	0.63%
2012	3.40%	3.48%	3.45%	-0.08%	-0.05%
2011	7.58%	7.87%	8.31%	-0.28%	-0.73%
2010	3.04%	2.54%	3.70%	0.50%	-0.67%
2009	7.19%	6.47%	6.10%	0.71%	1.09%
2008	4.61%	4.11%	4.05%	0.50%	0.57%
2007	4.98%	4.71%	4.10%	0.28%	0.88%
2006	3.77%	3.95%	3.21%	-0.18%	0.56%
2005	1.87%	2.07%	1.51%	-0.20%	0.36%
2004	3.44%	2.95%	3.40%	0.50%	0.04%
2003	4.82%	4.51%	5.33%	0.30%	-0.52%
2002	10.48%	9.67%	11.55%	0.81%	-1.07%
2001	5.15%	4.70%	5.21%	0.44%	-0.06%
2000	9.64%	9.50%	9.53%	0.14%	0.11%
1999	-0.01%	-0.06%	-0.86%	0.05%	0.85%
1998	6.27%	6.52%	6.08%	-0.25%	0.19%
1997	7.69%	7.78%	7.50%	-0.09%	0.19%

Source: Bloomberg and Thornburg Investment Management. Past performance does not guarantee future results.

■ Ladder outperformed

Chart 4 | AAA Municipal Yield Curves/Before and After “Operation Twist”



Source: Bloomberg and Thornburg Investment Management

was done to make the two portfolios duration-neutral so that the impact of the strategy chosen could be isolated. The BofA Merrill Lynch 6–8 Year Index was used to represent the **bullet strategy**. Over the period, the laddered hypothetical portfolio outperformed the total returns generated by the barbell and bullet approach around 65% of the time. Laddering also added 15 to 25 basis points of incremental return through December 31, 2017.

More telling, however, was the level of outperformance in different environments when the yield curve was undergoing periods of flattening or steepening over the history of the measurement period. In the

years when the laddering strategy outperformed, it did so, on average, by a larger margin than when the barbell or bullet strategies came out ahead.

For example, in 2011, as investors were taking a complacent attitude towards risk and the central bank of the United States, the Federal Reserve (the Fed), enacted a policy of purchasing long-term Treasury bonds and selling short-term Treasury notes in a deliberate effort to flatten the yield curve with the objective of easing lending conditions; market commentators later dubbed this “Operation Twist.” The effect was a yield curve flattening (see chart 4). During that period, the barbell strategy outperformed by roughly 29 basis points. In the period of greatly heightened risk aversion in 2013, during what market commentators dubbed the “Taper Tantrum,” the Fed began openly discussing the process of removing extraordinarily accommodative monetary policy; the curve steepened, and the laddered strategy outperformed the barbell by 38 basis points.

In a period during which bond insurance is less and less prevalent and its value questioned—and with some municipalities under financial stress and sometimes limited market liquidity—fundamental research on individual issues is more important than ever. Laddering has been demonstrated to be an effective technique for managing market and reinvestment risk, freeing Thornburg’s managers to focus on those areas of critical importance in today’s environment. ■

Important Information

Basis Point – A unit equal to 1/100th of 1%. 1% = 100 basis points (bps)

Duration – A bond's sensitivity to interest rates. Bonds with longer durations experience greater price volatility than bonds with shorter durations.

Yield Curve – A line that plots the interest rates, at a set point in time, of bonds having equal credit quality, but differing maturity dates.

The BofA Merrill Lynch indices used in the study are model portfolios of municipal obligations throughout the United States, with maturities ranging either from one to three years, six to eight years, eight to twelve years, or one to twelve years. These indices are subsets of the BofA Merrill Lynch US Municipal Securities Index, which is comprised of US dollar denominated investment grade tax-exempt debt publicly issued by US states and territories, and their political subdivisions, in the US domestic market. Qualifying securities must have at least a one-year remaining term to final maturity, a fixed coupon schedule and an investment grade rating.

The performance of any index is not indicative of the performance of any particular investment. Unless otherwise noted, index returns reflect the reinvestment of income dividends and capital gains, if any, but do not reflect fees, brokerage commissions or other expenses of investing. Investors may not make direct investments into any index.

Individual bonds are sometimes insured by private companies. The insurance guarantees the payment of principal and interest on a bond issue if the issuer defaults. In 2007 and 2008, the credit ratings of many bond insurers were downgraded, reflecting a decrease in claims paying ability of the insurers. Bond mutual funds are not insured, even if the underlying bonds are insured.

The laddering strategy does not assure or guarantee better performance than a non-laddered strategy and cannot eliminate the risk of investment losses.

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