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Laddering a Portfolio of Municipal Bonds

In any home construction project, chances are a ladder will be used to reach a higher point. One ascends the ladder, rung by rung, until the goal is reached. The concept of the ladder can also apply when constructing a sound municipal bond portfolio. In this paper, we explain the possible risks, potential return, and the diversification potential of using a ladder strategy when investing in bonds.

AN EXAMPLE OF BOND LADDERING

Bond laddering is a strategy that calls for maturity weighting, which involves dividing bond investments among several different bonds with increasingly longer maturities. Municipal bond ladders may be constructed to address both interest rate and reinvestment risk. If interest rates rise, the strategy calls for reinvestment of the funds from bonds that are maturing at the bottom of the ladder into bonds earning higher yields, and these are in turn added to the top of the ladder. If rates fall, this strategy seeks to mitigate reinvestment risk because longer-dated bonds that are at the top of the ladder, which presumably were purchased when interest rates were higher, should be yielding higher returns.[1]

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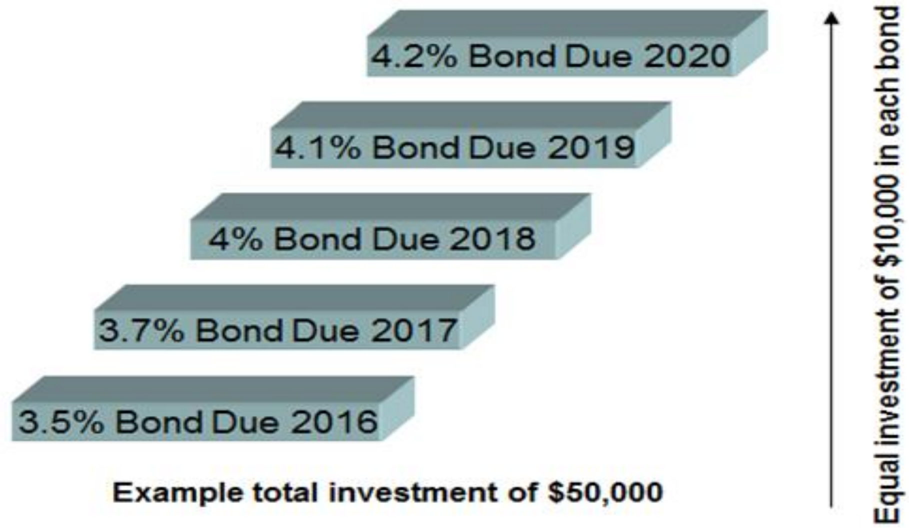
In its simplest form, the bond ladder may consist of bonds maturing over a period of years (e.g., two to six years). Exhibit 1 shows a conceptual example of this construction process using notional USD 10,000 equal investments in five municipal bonds with sequential year maturity dates.

[1] Over any period of time, interest rates can rise and/or fall. The laddering of an actual portfolio may not necessarily show uniformly increasing or decreasing interest rates.

Exhibit 1: Simple Example of a Short-Term Municipal Bond Ladder



Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes.

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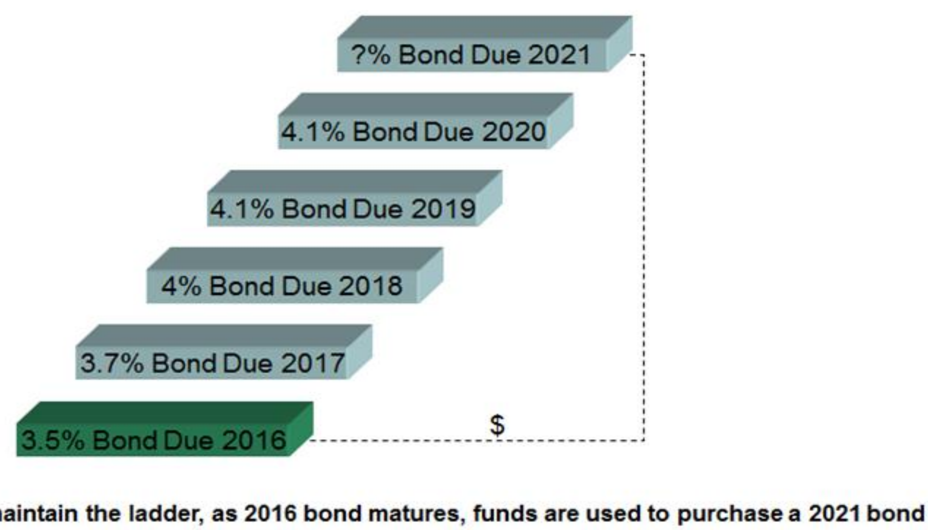
Investors must determine how many rungs their municipal bond ladder should have and the ultimate height of the ladder. The time between maturities is a variable chosen based on the trade-off between reinvestment risk and the lack of access to the money invested. If the goal is to keep the municipal bond ladder in place over time, then as the earliest bond matures, the ladder strategy replaces it with a bond of equal principal at the longer end of the maturity ladder (see Exhibit 2).

Exhibit 2: Continuing the Short-Term Municipal Bond Ladder



Source: S&P Dow Jones Indices LLC. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

The strategy illustrated in Exhibits 1 and 2 calls for the construction of a diversified portfolio of bonds from different issuers at each rung of the ladder.

BOND LADDERING PORTFOLIO BENEFITS

Laddering a bond portfolio versus investing in a single bond may provide the following potential benefits.

Laddering a bond portfolio may provide many potential benefits, compared with only investing in a single bond.

- Potentially decreased volatility in the portfolio value as interest rates change.
- The option to reinvest the principal of the maturing bond into longer-dated bonds, which may result in higher yields compared to shorter-term bonds.
- If equal weighted investments are made each year, the laddered portfolio may provide a higher total return as interest rates change.
- If the portfolio is further diversified by using bonds from different issuers, regions, and purposes, the laddered portfolio may reduce default and liquidity risk.
- Income generation if the ladder portfolio is built using bonds that pay periodic interest or coupons. Advisors have the ability to adjust these cash flows by choosing municipal bonds with different interest payment dates.

LADDERING: INDIVIDUAL BONDS VERSUS ETFs

Depending on the size of an individual's portfolio, investors may consider using bond funds or ETFs rather than individual bonds. Municipal bond ladders built with funds or ETFs may offer the following.

- **Diversification:** Bonds are typically sold in minimum denominations or multiples of minimum denominations. For corporate bonds and treasury bonds, minimum denominations are typically USD 1,000. For municipal bonds, minimum denominations are higher, at USD 5,000. For investors with smaller portfolios, these relatively high minimum denominations may limit their ability to diversify. Constructing a bond ladder via bond funds may mitigate these risks by spreading assets across multiple securities.
- **Lower Trading Costs:** Using funds to construct a laddered portfolio may lower transaction costs because fund managers are better able to pool capital and purchase bonds in larger lots. Additionally, fund managers could have better access to dealer inventory and could perform market surveillance to identify desired bonds.
- **Increased Liquidity:** Individual bonds trade in the OTC market, and daily liquidity can vary dramatically by the name of the issuer (borrower), quality of the bond, and other criteria such as coupon and maturity. In the event an investor needs to liquidate one or more rungs of the ladder, an ETF, which trades on an organized exchange, is more likely to provide better liquidity than an individual bond trading in the OTC market.

MATURITY-DATE FUNDS OFFER CUSTOMIZATION AND POTENTIALLY LOWER TRANSACTION COSTS

Maturity-date bond funds and ETFs provide an easy way to customize a portfolio while retaining the diversification and liquidity benefits of a fund structure. Investors can use these funds to target maturities and to build laddered portfolios in a similar fashion to using individual bonds, which may suit the needs of investors or institutions looking for large cash flows at defined dates. For example, parents preparing for their child's college education that begins in 2020 could purchase bond funds maturing in 2020 through 2022 in roughly equal investments assuming the cost will increase each year by roughly the same as the yield of the funds.

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Maturity-date bond funds are also expected to generate lower transaction costs than traditional bond funds because bonds will usually be held to maturity, rather than sold once they no longer meet fund criteria. A good example would be a 7-10 year bond fund versus a fund that matures in seven years (or eight, nine, or ten years)—for example a 2021 fund. The portfolios would be similar in 2014, except that the maturity of the former will be spread over four years versus a maturity of one year for the latter. However, as time progresses, the 7-10-year fund is forced to sell roughly 25% of its portfolio every year because bonds with seven years to maturity in 2014 will have maturities of six years in 2015. The 7-10 year fund then must add new bonds that have now aged and become 10-year bonds, whereas the 2021 fund will not be forced to sell bonds prior to the target date because it can theoretically hold the same bonds until maturity. Turnover will only result from creations and redemptions or from security selection decisions by the fund manager (the latter will generally be absent from an index fund). Thus, the expected one-way turnover of the 2021 fund will be lower by approximately 25% per year than that of the 7-10 year fund.

A TOOL FOR BENCHMARKING MUNICIPAL BOND LADDERS

To assist in evaluating decisions related to laddering municipal bond portfolios, S&P Dow Jones Indices publishes a detailed set of data about the municipal bond market: the S&P AMT-Free Municipal Series Indices (see Exhibit 3).

The S&P AMT-Free Municipal Series Indices were built with municipal bond constituents that are investment grade, have a minimum par amount of USD 2 million, and meet bond selection criteria designed to avoid provisions affecting cash flows.

Exhibit 3: Characteristics of the S&P AMT-Free Municipal Series

INDEX NAME	WEIGHTED AVERAGE COUPON	WEIGHTED AVERAGE PRICE	WEIGHTED YEARS TO MATURITY	WEIGHTED AVERAGE YIELD-TO-MATURITY	WEIGHTED AVERAGE YIELD-TO-WORST
S&P AMT-Free Municipal Series 2015 Index	4.43	104.13	1.04	0.43	0.43
S&P AMT-Free Municipal Series 2016 Index	4.47	107.31	2.04	0.84	0.84
S&P AMT-Free Municipal Series 2017 Index	4.56	110.14	3.03	1.14	1.14
S&P AMT-Free Municipal Series 2018 Index	4.59	112.55	4.59	1.37	1.37
S&P AMT-Free Municipal Series 2019 Index	4.54	113.82	5.04	1.67	1.67
S&P AMT-Free Municipal Series 2020 Index	4.50	114.57	6.04	1.92	1.92
S&P AMT-Free Municipal Series 2021 Index	4.62	115.87	7.05	2.19	2.19
S&P AMT-Free Municipal Series 2022 Index	4.65	116.50	8.05	2.37	2.37
S&P AMT-Free Municipal Series 2023 Index	4.61	116.56	9.05	2.53	2.53
S&P AMT-Free Municipal Series 2024 Index	4.43	104.13	1.04	0.43	0.43

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2015. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

The S&P AMT-Free Municipal Series Indices were designed to be replicable. This index series was built with municipal bond constituents that are investment grade, have a minimum par amount of USD 2 million, and meet bond selection criteria designed to avoid provisions affecting cash flows. Data on these indices is updated daily and is available for advisors to download at www.spdji.com.

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