

## S&P Fixed Income Indices: Municipal Bond Investor Tool Kit

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### Key Terms

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- **Alternative Minimum Tax (AMT):** An extra tax that some taxpayers are required to pay in addition to regular income taxes.
- **Coupon Rate:** The annual rate of interest to be paid by the issuer (borrower) to the bond holders (lenders).
- **Fixed Rate Bonds:** Bonds where the interest rate remains unchanged during the life of the bond.
- **High Yield Bonds:** Bonds rated below BBB-.
- **Investment Grade Bonds:** Bonds rated above BB+.
- **Maturity:** The date at which the bond is scheduled to be paid in full.
- **Multifamily Municipal Bonds:** Municipal bonds issued for specific housing projects and whose repayment is generated from the revenues associated with those housing projects.
- **Noncallable Bonds:** Bonds where there are no issuer (borrower) provisions enabling the issuer to repay all or part of the bonds prior to maturity.
- **Optional Redemption:** A provision that allows the issuer (borrower) to repay all or part of the bonds (loan) at a specific date and price.
- **Principal:** The amount of money due to be repayed to the bondholders at the maturity date of the bond issue.
- **Single Family Municipal Bonds:** Bonds issued for the purpose of funding single family mortgages.
- **Sinking Fund:** Funds that are set aside to repay bond principal prior to maturity on predetermined dates and, in most cases, in predetermined amounts.
- **Variable Rate Bonds:** Bonds whose interest rates fluctuate based on underlying indices.

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## Municipal Bonds, An Overview

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Municipal bonds are issued by a wide variety of entities for many different purposes. There are over 1.5 million municipal bond issues outstanding. These are held by individual investors, mutual funds, banks, insurance companies, and other financial institutions. While municipal bonds have historically had low defaults rates, the credit quality of the issuer (borrower) can vary, and some sectors and sub-sectors are more prone to default than others.

There are two basic types of municipal bonds:

1. *General Obligation Bonds (G.O.s)*: Bonds backed by the full taxing power of the issuer.
2. *Revenue Bonds*: Bonds issued for, and backed by, specific projects, and/or backed by specific revenue streams. Revenue bonds can be broken down into:
  - Basic infrastructure such as gas & electricity production and transmission, water & sewer infrastructure, or transportation infrastructure (i.e. toll roads, tunnels and bridges).
  - Specific purposes such as higher education, multifamily housing, hospitals, nursing homes, congregate care retirement communities, assisted living facilities, sales tax revenue, cigarette/liquor tax (“sin tax” collections), tobacco settlement proceeds, or for-profit entities using conduit financing to encourage local economic or environmental improvements.

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## Municipal Bonds and Risk

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There are a number of risks associated with investing in bonds. As interest rates change, so do the prices of most bonds. Bond prices, representing the present value of the cash flows of the investment, fall when interest rates rise. Conversely, when interest rates fall, bond prices rise. This is known as **interest rate risk**. A second type risk of closely associated with interest rate risk is **reinvestment risk** which occurs as the bondholder receives periodic interest payments and principal returns and the investor’s ability to reinvest those funds at the original rate of return is impacted by the current interest rate environment. For example, as interest rates fall, the next investment made will be at a lower return than the previous investment. The ability and willingness of the issuer to pay the principal and interest on the bonds as scheduled is known as **default risk**. Specific purpose revenue bonds often have a higher default risk profile than General Obligation bonds. **Liquidity risk** is the ability of the bondholder to sell the bond in the secondary market prior to maturity. This also includes the ability to sell the bond at a price equal to where the bond is valued. **Income tax risk** is when bondholders are impacted by taxable events such as capital gains on the sale of bonds.

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## Risk Mitigation

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While all risk cannot be reduced entirely, investors can manage or reduce risk by diversifying their portfolios, selecting appropriate bonds, and managing the duration of their fixed income investments.

Portfolio diversification is often cited as an investment core principle particularly following volatile periods in the market (e.g. 2007 and 2008). By investing in various issuers of debt and not centralizing investments in one or a few bonds, issuers can assist an investor in reducing the effect of negative news (“headline risk”) on the values of the bonds they hold and, in the worst cases, the effect of a bond default on the value of their portfolio.

Diversification also helps in reducing the impact of the liquidity risk of owning a bond that may become difficult to sell prior to maturity.

Careful selection of bonds suitable for the level of risk, investment horizon, and investment objective can also assist an investor in reducing risk. Historically, the municipal bond market has had a very low default rate overall. Some bond sectors have seen very few bond defaults, such as General Obligations. Other sectors, such as multifamily housing bonds, have higher incidents of defaults.

There are several ways bond investors can mitigate risk by managing the duration of their bond investments. One way is to simply invest in bonds and/or funds that have short-term investments. As interest rates fluctuate, the impact on the price of short-term bonds is less than that on longer-term bonds. However, the investor solely utilizing this approach would not benefit from the higher interest rates of longer-term investments, and therefore, would not benefit to the same extent if interest rates fall. They would, however, protect themselves from changes in interest rates.

A second method investors can use to manage risks associated with fixed income investing is laddering their bond portfolio. Laddering occurs when investors utilize an investment technique of segmenting their bond investments so that over a time period of multiple years, they have some bonds maturing in each year. Laddering can be achieved with bonds, bond funds, or a combination of both.

#### Fixed Income Investing Risks and Mitigation Tactics

<b>Risk/Risk Management:</b>	<b>Portfolio Diversification</b>	<b>Bond Selection</b>	<b>Duration Management</b>	<b>Maturity Laddering</b>
Interest Rate Risk			√	√
Reinvestment Risk			√	√
Default Risk	√	√		
Liquidity Risk	√	√		
Income Tax Risk		√		

A simple example of a laddered bond portfolio would be:

- US\$ 10,000 face value of 3.5% bonds due 2010
- US\$ 10,000 face value of 3.7% bonds due 2011
- US\$ 10,000 face value of 4.0% bonds due 2012
- US\$ 10,000 face value of 4.15% bonds due 2013
- US\$ 10,000 face value of 4.15% bonds due 2014

Over time, the proceeds from bonds that mature would be reinvested in a longer bond issued typically at a higher yield than a similar investment would yield in a shorter maturity.

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Laddering a bond portfolio versus investing in one bond maturing in 2014 will provide investors with the following benefits:

- *Decreased volatility* in the portfolio value as interest rates change
- Reinvesting of the principal of the maturing bond in longer dated bonds results in *typically higher yields* compared to comparable shorter-term bonds.
- If fundamentally equal-weighted investments are made each year, the laddered portfolio has the ability to provide a *higher total return* over changing interest rate environments.
- If the portfolio is further diversified by using bond issues from different issuers, regions, and purposes, the laddered portfolio also can *reduce default and liquidity risk*.

While laddered portfolios offer investors benefits in addition to those highlighted above, there are challenges to effective laddered. The challenges include:

- Finding bonds that meet the investors risk appetite.
- Finding bonds that have a maturity or term that meets the specific investment horizon(s) required.
- Finding bonds that may be available for purchase with a par value that fits the investment goal of the investor.
- Avoiding bonds that have uncertain cash flows such as single family municipal bonds, bonds with call provisions, and bonds where defaults can trigger distributions.
- Smaller block size transactions tend to be inefficient transactions for individual investors due to the cost of each transaction reducing the actual return of the investment.

## **S&P AMT-Free Municipal Series**

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To assist investors in making decisions about laddered their municipal bond portfolio, S&P Indices publishes a detailed set of data about the municipal bond market: the *S&P AMT-Free Municipal Series*.

The S&P AMT-Free Municipal Series is a family of indices that is designed to reflect the characteristics of a diversified portfolio of tax-exempt municipal bonds with defined maturity segments. The series has an index for each year: 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019.

To generate a consistent and comparable set of fundamental data about the municipal bond market, the indices are focused on fixed rate, investment grade, and noncallable municipal bonds with maturities of June 1<sup>st</sup> through August 31<sup>st</sup> of each year. Bonds where the issuer has the ability or is required to repay some or all of the bonds prior to maturity are excluded.

The data provided by these indices can be useful tools for investors looking to employ basic investment strategies to mitigate risk or to invest with specific investment objectives.

### Characteristics of the S&P AMT-Free Municipal Series as of 10/9/2009

Series	Weighted Avg Coupon	Weighted Avg Maturity	Weighted Avg Price	Weighted Avg Yield
2012	4.22%	7/5/2012	100.34	1.36%
2013	3.84%	7/5/2013	103.57	1.75%
2014	4.67%	7/5/2014	111.16	2.17%
2015	4.71%	7/5/2015	111.93	2.46%
2016	4.75%	7/5/2016	111.90	2.79%
2017	4.54%	7/5/2017	109.58	3.12%
2018	4.58%	7/5/2018	109.74	3.27%
2019	4.54%	7/5/2019	108.91	3.43%

Using the S&P AMT-Free Municipal Series and its characteristics as an example, an investor can create a laddered municipal bond portfolio with various investment horizons.

Below is an example of an equal investment in bonds or funds with the characteristics of the S&P AMT-Free Municipal Series to meet an investment horizon of 2016 (one can create similar portfolios of differing investment horizons; 2016 was arbitrarily chosen).

### Example of a laddered municipal bond portfolio with maturities out to 2016

Allocation	S&P AMT-Free Municipal Series	Weighted Avg Maturity	Weighted Avg Yield
20%	2012	7/5/2012	1.36%
20%	2013	7/5/2013	1.75%
20%	2014	7/5/2014	2.17%
20%	2015	7/5/2015	2.46%
20%	2016	7/5/2016	2.79%

Using the data produced by the S&P AMT-Free Municipal Series on 10/09/09, a laddered portfolio would have the following characteristics:

- Weighted Average Maturity: 7/5/2014
- Weighted Average Coupon: 4.67%
- Weighted Average Bid Price: 111.16
- Weighted Average Yield: 2.17%

The table below illustrates the effect of interest rate changes on the value of the laddered portfolio versus a single bond issue maturing in 2016 if interest rates were to change by 50 basis points on 10/06/09.

	Price	Interest Rates Rise by 50 basis points	Interest Rates drop by 50 basis points
Example Laddered Portfolio:	111.16	108.84 -2.09% Change	113.61 2.20% change
AA Bond 4.5% coupon due 7/31/2016 2.50% Yield	112.446	109.17 -2.9% change	115.84 3.02% change

### Long-Term Impact of Interest Rate Changes on a Laddered Bond Portfolio

- If interest rates were to remain unchanged during the investment period of the laddered portfolio, a steady return based upon the bonds or funds in the portfolio would be realized.
- If interest rates were to rise during the investment period of the laddered portfolio, the bond values would decrease, but the investor would have bonds maturing at par to reinvest at the higher interest rate, which would result in a higher return over the period invested.
- If interest rates were to fall during the investment period of the laddered portfolio, the bonds in the portfolio would benefit from increasing bond prices, but the reinvestment of proceeds from bonds maturing would be at lower yields. The average yields of the whole portfolio would remain higher than the current yields of bonds, as the older bonds in the portfolio were purchased at higher interest rates.

## Conclusion

In conclusion, as investors seek to both understand and mitigate risks of investing in municipal bonds, the S&P AMT-Free Municipal Series provides a set of data that gives insight into the municipal bond market by measuring specific and consistent parts of the market for each year from 2012 through 2019. This information can be used by investors to assist them in assessing individual bonds, comparing bond funds and fund performance to different investment horizons, and also as a consistent foundation of data for examining different risk mitigation steps such as duration management or portfolio laddering.

Other municipal indices that provide important information about the characteristics and performance of the municipal bond market include:

- The S&P National AMT-Free Municipal Index
- The S&P California AMT-Free Municipal Index
- The S&P New York AMT-Free Municipal Index
- The S&P Short Term AMT-Free Municipal Index

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