

# **Nozari Advisors**

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## **A Note on Taxation of Municipal Bonds**

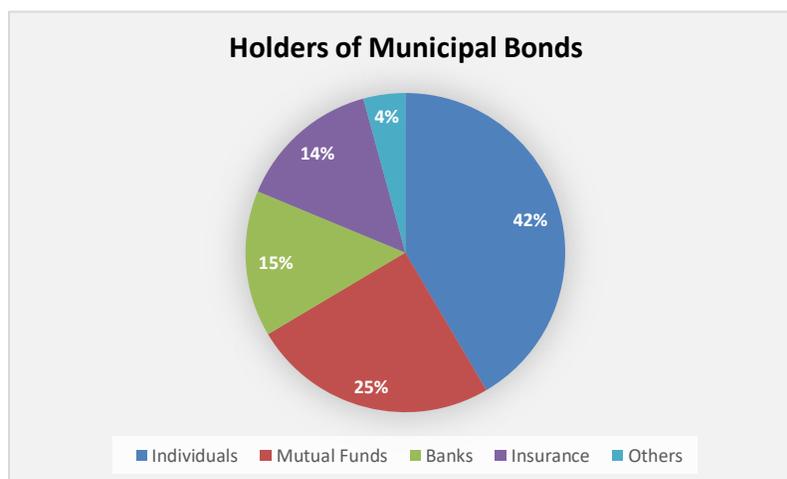
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### **Introduction**

Municipal bonds make up a relatively large sector of the United States fixed income market. As of the third quarter of 2016, there were over \$3.8tr of municipal bonds outstanding. The largest holders of municipal bonds are individual investors. They held approximately 67% of the bonds either directly or indirectly, while the remaining were primarily held by banks and insurance companies – see Figure 1.<sup>1</sup> The primary appeal of municipal bonds is that they provide tax-exempt income. The interest paid by the issuers to bond holders is often exempt from federal income taxes, and from state income taxes if the holders reside in the state in which the issuer is located.

**Figure 1.** Holders of Municipal Bonds as of 3<sup>rd</sup> Quarter of 2016 – Source SIFMA



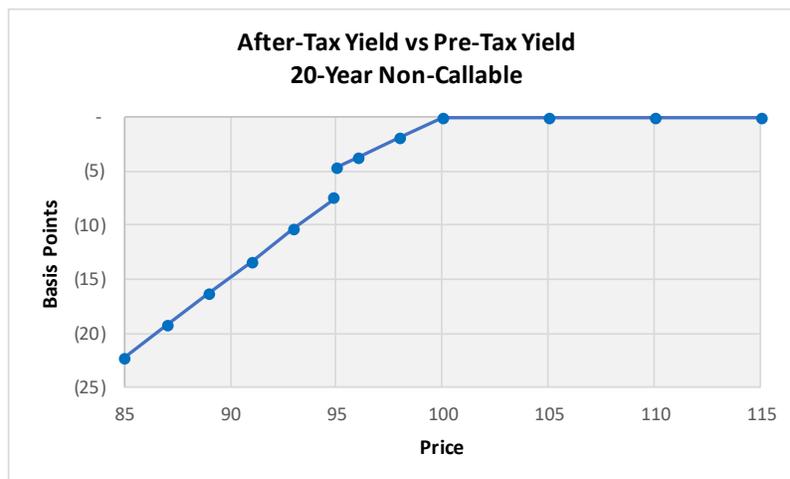
While municipal bonds generally provide tax-exempt income when bought at issuance (primary market) and if held until maturity or call, they could become subject to capital gain and ordinary income taxes if

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<sup>1</sup> See <http://www.sifma.org/research/statistics.aspx>

bought or sold in the secondary market. These potential tax liabilities could have meaningful impact on the overall return to investors. To illustrate, consider a 20-year non-callable bond originally issued at par with a coupon of 3%. With change in interest rates, the price of this bond would change in the secondary market. Figure 2 shows the difference between after-tax yield and pre-tax yield if this bond were to be purchased in the secondary market at different prices.<sup>2</sup> It shows that if the bond is purchased at a discount, its after-tax yield would be lower than its pre-tax yield. With a 100-bp rise in interest rates, it is likely that the price of the bond in this example would drop to 85 or below. Then, the standard yield-to maturity, often used by investors as a measure of value, would overestimate the after-tax return by more than 20bp per annum.

**Figure 2.** After-Tax Yield vs Pre-Tax Yield for a 20-year non-callable bond purchased at different prices.



### **Tax Rules are Complex!**

The laws governing taxation of municipal bonds are complex! Figure 2 readily demonstrates this point -- there is no tax impact if the bond is purchased above par, and there is a “cliff” and change of the regime if the bond is purchased at a discount!<sup>3</sup> It is important to note that the example in Figure 2 is for only a very simple case, and assumes that the bond is held until maturity. But, what if the bond is sold before

<sup>2</sup> Pre-tax yield is the standard yield to maturity calculated without any considerations to any tax liabilities. After-tax yield is the same, except that the final principal payment of the bond is reduced by the tax liability.

<sup>3</sup> The cliff and change of regime depicted in Figure 2 is due to de minimis rule which we will discuss later in the paper.

maturity? What if it is a callable bond? What if it gets called by the issuer? What if it was originally issued at a discount (like a zero-coupon bond)? What are the tax treatments for all these cases?

The tax rules are laid out in section 103 of the IRS code and discussed in various other IRS publications. To put it bluntly, they are not easy to understand and appear to be prepared for tax professionals and not for the typical individual investor. In addition to the IRS publications, there are many highly technical articles focused on the dynamics of the municipal bond markets, the impact of the tax rules, and the opportunity for return optimization. See, for example, Ang, Bahansali, and Xing (2010), Kalotay (2014), and Kalotay and Howard (2014).<sup>4</sup> In addition to the technical papers, there are several example-driven papers sponsored by the larger brokerage firms focusing on the more interesting aspects of the taxation. For example, see a paper by Wells Fargo Advisors which is easily available on the internet. All these papers are useful, but they do not layout the key principles that derive the taxation, and do not offer an intuitive understanding of the rules.

### **Our Goal**

Generally, here is the spirit. If bonds are bought in the secondary market at a discount relative to par (or to an accreted price if the bond was originally issued at a discount), that discount is subject to additional taxation. In addition, bonds sold in the secondary market prior to maturity (or called if bought in the secondary market) could become subject to taxes for capital gains and losses. How do the tax rules achieve these ends? As we pointed out earlier, there are many possible cases to consider. It would be unwieldy to spell out the rules for each case individually.

Our goal in this note is to offer a concise but general framework for considering all the possible cases. We use four key principles to define our framework. These principles should help investors to develop an intuition on how taxes on municipal bonds work, and help them to assess value as they search for opportunities in the secondary market. Next, we describe our four principles and give an example for each to further illuminate them.

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<sup>4</sup> See [www.Kalotay.com](http://www.Kalotay.com) for a substantial body of work and sophisticated analytics for fixed income securities, particularly municipal bonds.

We have used our framework to develop an EXCEL based model for evaluating investment in municipal bonds. You can download this spreadsheet at your own risk from [www.NozariAdvisors.com](http://www.NozariAdvisors.com).

## **Four Principles of Taxation of Municipal Bonds**

### **1) Cost Basis – Capital Gain and Losses**

The cost basis of a municipal bond is calculated by accreting the purchase price using a constant yield equal to the “yield-to-worse” at the time of the purchase. A bond sold above its cost basis at the time of the sale produces a “Capital Gain.” Similarly, a bond sold below its cost basis at the time of the sale produces a “Capital Loss.”

*For example, consider the bond in Figure 2 (20-year non-callable with a coupon of 3%). Suppose it is purchased at the price of \$90.00 with a yield to maturity of 3.71%. Using this yield, the bond’s cost basis in 5 years would be \$91.86. If the bond were to be sold at a price of \$100, there would be a capital gain of \$8.14 which is subject to long term capital gains taxes.*

### **2) Changes in Cost Basis -- Taxable Interest Income**

The cost basis of a municipal bond changes over time. For a bond purchased at premium, the cost basis decays over time. For a bond purchased at discount, the cost basis increases overtime. The decay of the cost basis does NOT generate a tax benefit. On the other hand, the increase in cost basis is considered “taxable interest income” and is subject to ordinary income taxes. The taxes are paid upon sale, maturity, or call. There are two exceptions to this principle and are explained below.

*For example, consider our 20-year non-callable bond with a coupon of 3%. Its cost basis during the 5-year holding period increases from \$90.00 to \$91.86. Upon sale, the \$1.86 increase in cost basis is considered taxable income and is subject to ordinary income taxes.*

*To put the two principles together, the 10-point gain in this example is subject to taxes -- \$8.14 for capital gain, and \$1.86 for ordinary income.*

### **3) Original Issue Discount – Reducing taxable interest income**

If a bond was originally issued at a discount (OID), the bond holder would be able to reduce his taxable Interest Income in Principle 2. The reduction allowed is equal to the amount that the bond price had accreted using yield at issuance. The reduction cannot exceed the taxable interest income!

*For example, again, consider our 20-year bond with a coupon of 3%. Suppose our bond was originally issued 10 years ago as a 30-year bond with the price of \$98.00 and a yield of 3.10%. On*

*our purchase date, the issue price is accreted to \$98.47, and on our sale date, it is accreted to \$98.77. Therefore, we would reduce the interest income by \$0.30 (= \$98.77 - \$98.47). Hence, the amount subject to ordinary income would be \$1.56 (= \$1.86 - \$0.30).*

*To put the three principles together, the 10-point gain in this example is subject to \$8.14 for capital gains and \$1.56 for ordinary income. The remaining \$0.30 is free from taxes.*

#### **4) De minimis Rule – Converting Ordinary Income to Capital Gain**

If a bond is purchased with a de minimis discount (less than  $\$0.25 \times$  whole years to maturity), the increase of the holder's cost basis over time will no longer be subject to ordinary income taxes. Instead, the increase in the basis will be taxed as capital gain.

*For example, consider our 20-year, 3% bond and assume it was purchased for \$96.00 – i.e. a discount of only \$4.00. Given its 20-year to maturity, the de minimis discount is \$5.00 (=  $20 \times \$0.25$ ). Hence, our purchase would qualify for de minimis rule. Then, in 5 years when the bond is sold for a price of \$100, the entire \$4.00 of gain will be considered as capital gain and subject to long-term capital gain taxes -- no portion will be subject to ordinary income tax rates.*

### **Conclusion**

Municipal bonds offer tax free investment income to investors. Yet, they could become subject to taxation if they are purchased or sold in the secondary market. Many factors including the purchase price of the individual holder or the original issue price impact the potential taxes. The gain of a bond purchased at a discount and sold later at a profit could be subject to capital gain taxes and ordinary income taxes. The rules are complex. In this note we defined four key principles that govern the taxation of municipal bonds. They could be used to estimate taxes for all the possible cases. A complementing spread sheet model is developed and available from our website -- [www.NozariAdvisors.com](http://www.NozariAdvisors.com).

### **References**

**Ang, A., Bhansali, V., and Xing, Y., (2010)** "Taxes on Tax- Exempt Bonds," *Journal of Finance*, Vol **65**, No. **2**, 565–601.

**Kaloty, A. (2014)** " The Interest Rate Sensitivity of Tax-exempt Bonds under Tax-Neutral Valuation, *Journal of Investment Management*, Vol 12, No.1 62-68.

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**Wells Fargo Advisors,** "Tax Rules for bond investors".