The Tax Treatment of Municipal Discount Bonds: Correction of a Fallacy

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■ Hopewell and Kaufman [6] recently observed that *primary* issue discount municipal bonds are likely to sell at higher effective yields than would be the case if the bonds were priced at par.

> For discount bonds, the difference between the purchase price and the par value is subject to a capital gains liability. Because the coupon payments are exempt from federal income taxes, discount bonds generally carry a greater tax liability and require a compensating higher or "penalty" pre-tax return than par bonds [6, p. 43].

Earlier studies by Hopewell and Kaufman are based on this same tax treatment of the discount [7, 8]. The purpose of this paper is to correct the fallacy of capital gain liability that exists in Hopewell and Kaufman's rationale for the existence of penalty yields on primary issue municipal discount bonds. On a primary issue the discount is considered tax-exempt interest by the Internal Revenue Service (IRS). Any subsequent discount due to market forces, however, is subject to a capital gains liability.[1] Individual investors, in contrast to institutional investors, are usually unaware of the correct tax treatment of original issue municipal discount bonds. This is especially true if the bond is acquired in the secondary market; the typical retail broker, unaware of a bond's history, cannot make the distinction between original discount and subsequent discounts.[2]

[1]Authors of financial texts should make a clear distinction on the difference in tax treatment between original discounts and discounts caused by market movements. Several current texts are unclear in this matter. (See, for example, [1, p. 426; 2, p. 145; 3, p. 127; 4, p. 416; and 12, p. 202]).

[2]Based on the comments of an anonymous review by an underwriter. Moreover, see [5, p. 65–77] for a complete description of the underwriting process. Some people may erroneously assume that the offering by the underwriter to the investors is a secondary market transaction. The correct interpretation for tax purposes is that the offering to the public is a primary market transaction.

IRS Regulations and the 1973 IRS Ruling

The interest on the obligations of a state or its political subdivisions is exempt from federal income tax [9]. Obligations include notes and ordinary written agreements of purchase and sale providing for deferred interest-bearing payment. If the obligations are sold at a price below par, however, it is not necessarily clear whether the discount is considered as deferred interest or as capital gains. This distinction is important, because the discount is tax-exempt in the former case and taxed at the capital gains rate in the latter case.

The IRS clarified the tax treatment of discount bonds in 1973 with the issuance of Revenue Ruling 73-112 [11]. This Ruling updated a 1932 General Counsel Memorandum [10] indicating that original issue discounts on state or municipal obligations *should* be treated as tax-exempt interest. Any subsequent gain or loss due to market forces, however, is *not* considered tax-exempt interest, but is considered as a capital gain or loss. The original discount must be apportioned evenly over the terms of the obligation and treated as interest income. Moreover, the tax-exempt discount is apportioned between the original holder and any subsequent purchaser.

IRS Ruling 73-112 undermines Hopewell and Kaufman's rationale for the existence of penalty yields on municipal bonds originally sold at a discount. The difference between the original purchase price and the par value is not subject to a capital gains liability; instead the gain is apportioned as interest income over the life of the obligation. The only difference between capital gains, considered to be deferred tax-exempt interest income, and regular interest income is in the timing of the two flows. Interest income is a cash flow each period, while apportioned capital gains income represents only a paper flow until the bond is sold or redeemed. The following example illustrates the resulting impact on the investor's cash flow under the correct handling of the discount.

An Example of the Tax Treatment of Discount Bonds

Let us assume an investor with a marginal capital gains tax rate of 28% purchases an original issue, 20-year municipal bond with a par value of $1,000. For ease of exposition, we assume zero transactions costs. Inclusion of transactions costs would not change the results and would only complicate the example. Moreover, the bond carries a stated coupon rate of 4%, even though the current tax-free market rate is 7%. In order to yield 7%, the bond would obviously sell at a discount with the current price (P_0) being:

$$P_0 = \sum_{t=1}^{20} \frac{\$40}{(1+.07)^t} + \frac{\$1{,}000}{(1+.07)^{20}}$$

$$P_0 = \$682.18.$$

As the bond is sold initially at a discount of $317.82, the discount should be apportioned as interest income for tax purposes, at a rate of about $15.89 per year.

Consider two cases: 1) The bond is held to maturity; and 2) The bond is sold one year from now.

Case 1

a) Assume the bond is held to maturity and the original discount of $317.82 is correctly treated as tax-exempt interest. Then:

$ 682.18	P_0, Purchase price
+317.82	Apportioned tax-free interest income
$1,000.00	Cost-adjusted basis

As the investor receives $1,000 at the bond's maturity and as the bond has a basis of $1,000, there is no capital gain. The investor's after-tax yield to maturity (YTM) is obtained by solving:

$$\$682.18 = \sum_{t=1}^{20} \frac{\$40}{(1+\text{YTM})^t} + \frac{\$1{,}000}{(1+\text{YTM})^{20}}$$

for a yield of 7%.

b) Assume the bond is held to maturity and the original discount is incorrectly treated as a taxable capital gain, then:

$1,000.00	Par value
−682.18	P_0, Purchase price
$ 317.82	Capital gains recognized and treated as capital gains for tax purposes

The net proceeds after taxes are equal to:

$1,000.00	Par value
−88.99	Capital gains tax liability ($317.82 × .28)
$ 911.01	Net proceeds after taxes.

In this instance, the YTM is equal to:

$$\$682.18 = \sum_{t=1}^{20} \frac{\$40}{(1+\text{YTM})^t} + \frac{\$911.01}{(1+\text{YTM})^{20}}$$

for a yield of 6.708%.

The correct tax treatment of the original discount as tax-free interest income results in higher net proceeds and a higher after-tax yield to maturity for the investor. Next, we examine what happens if the investor sells the bond one year from now.

Case 2

The price of the bond one year from now if the market rate remains at 7% ($P_{1,7\%}$) is:

$$P_{1,7\%} = \sum_{t=1}^{19} \frac{\$40}{(1+.07)^t} + \frac{\$1{,}000}{(1+.07)^{19}} = \$689.93.$$

a) If the bond is sold at $P_{1,7\%}$, and the original discount is correctly treated as tax-exempt interest:

\$682.18	P_0, Purchase price
+15.89	Apportioned interest income
\$698.07	Cost-adjusted basis

Then:

\$689.93	$P_{1,7\%}$, Sales price
−698.07	Cost-adjusted basis
(\$ 8.14)	Loss recognized and treated as a capital loss due to market forces

The \$8.14 capital loss results in a tax savings of \$8.14 × .28 or \$2.28. For ease of presentation, it is assumed that a capital loss is used to offset other capital gains. The net proceeds to the investor are equal to:

\$689.93	Sales price
+2.28	Tax saving
\$692.21	Net proceeds after taxes

Next, we examine the one-year holding period yield after taxes when the market rate is 7% ($HPY_{1,7\%}$) using the following equation:

$$HPY_{1,7\%} = \left[\frac{(P_{1,7\%} - P_0 - T_{1,7\%}) + I_1}{P_0}\right] 100$$

where $T_{1,7\%}$ is the capital gain (loss) tax liability (tax shield) at the end of the holding period, and I_1 is the tax-free interest payment received at the end of the holding period. This results in:

$$HPY_{1,7\%} = \left[\frac{(\$689.93 - \$682.18 + \$2.28) + \$40.00}{\$682.18}\right] 100$$

or, $HPY_{1,7\%}$ = 7.334%. The holding period yield is greater than 7% because of the \$2.28 tax saving generated from the \$8.14 capital loss.

b) If the bond is sold at $P_{1,7\%}$, and the original discount is incorrectly treated as a taxable capital gain:

\$689.93	$P_{1,7\%}$, Sales price
−682.18	P_0, Purchase price
\$ 7.75	Capital gains recognized and treated as capital gains for tax purposes

The net proceeds after taxes are equal to:

\$689.93	Sales price
−2.17	Capital gains tax liability
\$687.76	Net proceeds after taxes

The after-tax holding period yield is equal to:

$$HPY_{1,7\%} = \left[\frac{(\$689.93 - \$682.18 + \$2.17) + \$40.00}{\$682.18}\right] 100$$

or, $HPY_{1,7\%}$ = 6.682%. The holding period yield is less than 7% because of the incorrect capital gain treatment of the original discount.

The correct tax treatment of the original discount as tax-free income results in higher net proceeds after taxes when the bond is held to maturity or if the bond is sold one year after purchase. The difference is equal to the apportioned interest income times the capital gains rate (\$317.82 × .28 or \$88.99, and \$15.89 × .28 or \$4.45, for the 20-year and 1-year holding periods, respectively). The increased proceeds result in higher after-tax yields for the bonds when the correct tax treatment is used.[3]

Summary

The difference between the par value and the original purchase price of a discounted municipal bond has been incorrectly treated as a capital gain, subject to federal income tax at the capital gains rate. This capital gains tax liability has been used as an explanation for "penalty yields" on discount bonds as compared to similar bonds selling for par.

The original issue discount on municipal bonds should be treated as tax-exempt interest income according to IRS Revenue Ruling 73-112. This tax-

[3]Additional cases with changing market rates are presented in Appendix A. Appendix B presents an analysis of the correct tax treatment of discount vs. par bonds.

exempt gain is not only amortized over the life of the bond, but it also has to be apportioned between the original holder and any subsequent purchaser. The example shows that correctly reporting the discount as tax-exempt interest income is preferable to capital gain treatment.

If original issue municipal bonds continue to sell at penalty yields, it will not be due to the capital gain tax liability. Rather, it will likely be due to the timing of cash flows (*i.e.*, actual vs. paper flows).

References

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Appendix A. Changing Market Rates

The paper presents two cases where the market rate of interest is constant over the investment horizon. This appendix briefly looks at two additional cases where market rates will not remain constant: 1) the market rate increases to 8% one year from now and the bond is sold, and 2) the market rate decreases to 6% one year from now and the bond is sold. The net proceeds and holding period yields after tax are calculated in a similar fashion as above and are presented in Exhibit A.

In Case 3, with an increase in market interest rates, the correct treatment of the original discount as tax-free income results in a higher tax shield, thereby increasing the after-tax cash flow and yield of the investor. With a decrease in market interest rates as in Case 4, the correct treatment of the original discount minimizes the taxable capital gain, thereby increasing the after-tax cash flow and yield. On the other hand, the incorrect tax treatment of the original discount minimizes the tax shielding loss and maximizes the taxable capital gain, just the opposite of what is desirable and needed to maximize the investor's after-tax cash flow, thereby reducing the investor's yield. These results are consistent with the constant interest rate cases presented in the main body of the paper.

Appendix B. Discount Bonds vs. Par Bonds

It is tempting to conclude that discount bonds should not sell at a penalty. At this point, however, it is premature to specify whether or not discount bonds should sell at "penalty" yields compared to par bonds. Rather, a comparison of the holding period yields on discount bonds and par bonds is needed to help clarify this issue.

Let us compare the discount bond from the previous example in Appendix A with a bond originally sold for par under the conditions of an increase in the market rate (Case 3), and a decrease in the market rate (Case 4). A market rate of 7% implies a stated coupon rate of 7% for the bond originally selling for par, or $PAR_0 = \$1{,}000$.

The price of the par bond one year from now with a market rate of 8% ($PAR_{1,8\%}$) is:

$$PAR_{1,8\%} = \sum_{t=1}^{19} \frac{\$70}{(1+.08)^t} + \frac{\$911.01}{(1+.08)^{19}} = \$903.96.$$

Assuming a 28% capital gain rate, the tax saving is:

\$ 903.96	Sales price, $PAR_{1,8\%}$
−1,000.00	Purchase price, PAR_0
(\$ 96.04)	Loss recognized and treated as capital loss due to market forces
×.28	Capital gain (loss) tax rate
\$ 26.89	Tax saving

Exhibit A. Net Proceeds and Holding Period Yields After Tax

	Discount Treated Correctly		Discount Treated Incorrectly	
	Net Proceeds	HPY(%)	Net Proceeds	HPY(%)
Case 3: Market Rate Increases to 8% ($P_{1,8\%}$ = \$615.86)	\$638.88	(0.484)	\$634.43	(1.136)
Case 4: Market Rate Decreases to 6% ($P_{1,6\%}$ = \$777.84)	\$754.78	16.506	\$750.34	15.855

This results in a cash flow of \$930.85 (\$903.96 + \$26.89) for the investor.

In a similar manner, the price of the par bonds one year from now, with a decrease in the market rate to 6% ($PAR_{1,6\%}$), is:

$$PAR_{1,6\%} = \sum_{t=1}^{19} \frac{\$70}{(1+.06)^t} + \frac{\$1{,}000}{(1+.06)^{19}} = \$1{,}111.58$$

In this case, the tax liability is:

\$1,111.58	Sales price, $PAR_{1,6\%}$
−1,000.00	Purchase price
\$ 111.58	Capital gains recognized due to market forces
×.28	Capital gain tax rate
\$ 31.24	Tax liability

This results in a cash flow of \$1,080.34 (\$1,111.58 − \$31.24) for the investor.

The next step is to compare the holding period yield after taxes (HPYs) for the discount and the par bond for both an increase in the market interest rate (Case 3), and a decrease in market interest rate (Case 4). These yields are shown in Exhibit B.

It can be seen that an investor's preference for a discount on a par bond should depend on his or her expectations about future interest rates. If the future market rate is expected to increase, an investor should prefer a par bond, for a par bond results in a higher yield after taxes. On the other hand, if rates are expected to decrease, a discount bond should be preferred. Assuming equally likely probabilities for an interest rate increase or decrease results in the following expected HPYs for the discount bond ($\overline{HPY}_{DIS}$) and for the par bond ($\overline{HPY}_{PAR}$):

Exhibit B. Holding Period Yields After Taxes For Discount and Par Bonds

	Case 3 Market Rate Increases to 8%	Case 4 Market Rate Decreases to 6%
Bond originally sold at discount with market rate of 7%	(0.484%)	16.506%
Bond originally sold at par with market rate of 7%	0.085%	15.034%

$\overline{HPY}_{DIS} = (.5 \times .484\%) + (.5 \times 16.506\%) = 8.011\%$;
$\overline{HPY}_{PAR} = (.5 \times .085\%) + (.5 \times 12.034\%) = 7.5591\%$.

Consequently, with the same expectations about changes in future interest rates, the investor should prefer the discount bond. Given this last example, for an investor to be indifferent would require a probability of about 72% for a market increase, and a 28% chance for a market decrease. If the bond receives the proper tax treatment, there is no justification for "penalty" yields on municipal discount bonds.